THE

VETERINARY JOURNAL

MARCH 1900.

Editorial.

SOUTH AFRICA.

THIS is the all-engrossing subject of the present time, and affects veterinary surgeons as well as ordinary men. I am glad to learn that many veterinary surgeons have gone to the front to take a share in defending their country in her hour of peril, and in maintaining her just rights and privileges. Of course it is the duty of every capable man to take his share of the national burdens, but it is not quite so easy as it seems to determine what that share is to be. To the young and ardent among our countrymen the glamour of a campaign in a foreign country so pleasantly situated climatically as South Africa is almost overpowering, and it is only natural if their answer is, "Let us go to the front under any conditions." I am not so sure if the question can be answered so readily and so easily. It seems hard and unkind to discourage enthusiastic youth, and I have no wish to do so, nor to curb the spirit of valour and enterprise which has led to the colonisation of so large a portion of the globe by the British race, but with valour there must be mixed a certain amount of discretion. It is always dangerous to allow ourselves to be carried away by enthusiasm, still more so by excitement. The enthusiast is apt to become a fanatic, and a fanatic is one who, whilst he sees very clearly, sees only one side of the question. Now, if there is one truism more frequently neglected than another, it is that there are always two sides to a question. Enthusiasm may urge a man to heroic enterprise, but it may often blind him to the fact that he is being made the dupe or the tool of crafty men. Or it may encourage him to overlook the humble duty that lies in his way, and to pose as a saint or a hero whilst he is merely following the lead of ambition.

In view of these considerations, I should like to know if the young men who have gone to South Africa to do veterinary work have gone as qualified surgeons, and have been sufficiently careful to vindicate the rights of their profession. Of course, if any young man, veterinary student, veterinary surgeon, or otherwise, chooses to go to South Africa as a soldier, that is his affair, but if a veterinary surgeon goes without securing the proper recognition of his skill and experience by means of Her Majesty's commission or

other acknowledgment of rank, then I say he is doing his professional brethren a grave wrong; he shows a lamentable want of *esprit de corps*, and comes perilously near to betrayal of trust. Had the British Government, instead of being the strongest in the world, been some wretched little South American republic, there might have been need for all citizens to forget distinctions of rank and fight for bare existence, but we all know that Her Majesty's ministers have enormous powers and command enormous resources, and therefore there is no need in this country for any class to sink its rights and privileges even at a critical moment. I have no doubt that if any young veterinarians have acted in a thoughtless way, their errors have been prompted by generosity and self-denial, but it is quite possible for self-denial to go too far, and to become foolish sentimentality. To deny oneself gratifications for the sake of the poor and the helpless is to show oneself a true man; to do this for the glorification of the rich and the powerful is to prove oneself a simpleton. As I have said, the Government of this country is powerful beyond all others, and, being the visible embodiment of a great and free nation, it is just and equitable, and not only able but willing to bestow the recompense due to each man whom it employs. But it cannot be expected to go and dig out merit or press rewards on its employees; they must claim these for themselves, quietly and modestly of course, but with becoming firmness. I do not wish to harp constantly on the same string, but I must remind my young friends, whether my own students or those of other colleges, that we are as yet but a small profession, that we have still a long way to go in order to obtain the recognition we desire, and that we have many opponents who treat us, if not with open enmity, yet with sullen disdain. If we neglect to vindicate our own honour, what will these men think of us? Will they not think their contempt justified, and will not our task in the future be rendered harder than ever? I recommend as a watchword to all candidates for Government employment at this and at all times—"Honour to whom honour is due."

Original Papers.

THE PROSECUTION OF VETERINARY SURGEONS FOR CRUELTY CONSIDERED FROM A SOCIAL, LEGAL, AND PROFESSIONAL ASPECT.[1]

BY W. F. BARRETT, ESQ., BARRISTER-AT-LAW.

GENTLEMEN,—Some time ago your esteemed secretary informed me that he had considerable difficulty in inducing members to prepare and introduce subjects for discussion at our meetings. I resented this state-

[1] Read before the Central Veterinary Medical Society, January 4th, 1900.

ment, and informed him that only a few months previously I had made an effort to liquidate my obligations to the Society by contributing a paper on a dry legal subject, and that therefore I could not properly be charged with remissness or lack of industry. Undaunted, however, by my reply, he insisted that I must try again, fill in a gap as it were, in order if possible to induce others to follow suit. Being desirous of pleasing him, and of assisting in the progress of the Society of which we are all proud, I am constrained to thrust another paper upon you in the hope that it may afford you some interest and information in respect to a subject which has on several occasions somewhat agitated the profession, and given rise to personal recriminations, which I for one deeply deplore.

My address, as you are aware, is entitled "The Prosecution of Veterinary Surgeons for Cruelty, considered from a Social, Legal, and Professional Aspect."

Now, gentlemen, let me say at once that I especially hope you will not discuss my paper in relation to any of the unfortunate cases which have arisen during the past year or two. I invite you to discuss it from a broader point of view, omitting individual actions and responsibilities, rather directing your minds as to the line of conduct which ought to be pursued in the event of further prosecutions arising, against whom none of us know, and determining how to act in order to avoid, as far as you possibly can, these charges which tend to disturb the profession as a whole, inflict indignity and loss of position upon the incriminated member himself, lower the status of our profession in the eyes of the public, and induce many, who of course do not know us, to regard us as destitute of feelings of humanity, delighting in or for a paltry fee inflicting pain upon dumb creatures whom it is essentially your mission to relieve.

I have purposely decided to treat this subject from three aspects, because I feel that you will the more readily be able to follow me personally. I regard the legal aspect of the subject as the most important; some of you, on the other hand, may feel that the social results which ensue are the most to be regretted; others again may attach great moment to the professional harm which must inevitably follow from a conviction by a bench of magistrates.

First, then, let us consider the social bearing of the question. You will, I am sure, agree with me when I say that professional men, whether they enjoy society or not, have to consider and uphold their social position, not only in the interests of those who depend upon them, but also because their professional status is largely influenced by such means. It cannot be denied that the educated and highly trained man of good social standing commands a higher fee, and enjoys greater respect from his clients than one who, with perhaps equal ability, yet owing to the want of earlier opportunities, has been unable to receive so good a training, can possibly hope to receive, although it must unfortunately be admitted that in the other learned professions the results of disparity of education are more noticeable than in our own, and moreover a practitioner who from any cause lowers his own position lowers *pari passu* the status of veterinary surgeons who practice in his neighbourhood, aye, even the status of those who are working in the same county. I think it goes without saying that a veterinary surgeon who is prosecuted and fined on a charge of cruelty before a bench of magistrates loses considerably in dignity and position, and the magistrates themselves, being men for the most part utterly desti-

tute of legal training, fail to appreciate the importance of their decision, and hastily inflict a punishment upon a man which he can never really overcome, a punishment which I have no hesitation in saying is in the majority of cases undeserved. The magistrates, again, have to be taught by the profession, or those who represent it, that a mere error of judgment is not a criminal act, that human nature is prone to err, that there are two sides to most questions, and that the question of intent is a matter which they might condescend to consider, even though the prosecution has been instituted against a professional man.

It cannot be too clearly impressed upon you that these prosecutions are of a criminal nature, and hence are much more detrimental to the character of a man than a civil action, which may involve a heavier pecuniary loss, but still is unassociated with the stigma which attaches to these cruelty charges. It is a matter of the utmost surprise to me that the profession as a whole has not given more consideration to the subject with a view to assisting each other more adequately when the time of trial comes. I deem it unnecessary to dwell upon this branch of my subject further, beyond remarking that the results which follow these prosecutions are self-evident to you all, and I shall be surprised if there is one member present who will attempt to minimise the importance of the social aspect of the question. It is our duty, therefore, so to conduct ourselves as to render a prosecution unnecessary; it is our duty further to resist, by all means in our power, these charges when they are unjustly brought.

Secondly, With respect to the legal aspect of the subject, I regard this as perhaps the most important, inasmuch as, by a due appreciation of the responsibility which attaches to a practitioner in the exercise of his profession, not only in respect of the treatment he adopts, but with reference to the opinions which he gives, he will be able to avoid the indiscretions and pitfalls into which some few of our members have fallen, with results which for a long time will be implanted in their minds. It must be remembered that no person, whether he be a professional man or not, is permitted to inflict unnecessary pain upon the lower animals. I use the term unnecessary in a broad sense, inasmuch as commercial and other necessities compel us to inflict pain upon certain animals which exist to serve mankind, either in the way of food or by placing us in a position to acquire food. Hence it is that certain operations are allowed to be performed by men who are not specially skilled to perform them; and again in the interests of science licenses are granted to scientific men who are thereby, contrary to the rules which ordinarily apply, allowed to make certain experiments with a view to prolonging human life, which of necessity cause some suffering during the conduct of them. In a sense the professional man is licensed to inflict pain, which the public regard as necessary, having confidence in his especial knowledge and judgment, in order that an ulterior benefit may ensue and the animal be rendered more useful to man. Apart from the general application of this principle, the infliction of unnecessary pain may be accompanied by punishment, whether the offending person be skilled or not. The public being satisfied and assured that operations will not unnecessarily be resorted to, those operations are allowed to continue, and hence any slackening or weakening of this assurance is highly detrimental to any profession, and you may rest assured that if public opinion is once aroused against you, but a short space of time will ensue before the Legislature will give effect to it in this as in all other instances.

The veterinary surgeon, then, like the medical man, must inflict pain only to relieve, and if his conduct is such that a contrary intention can reasonably be imputed to him, he may be called upon to pay the penalty.

It is to be borne in mind that any person engaged in the treatment of disease is required to use reasonable care, and apply such skill as he possesses, and hence a higher standard of skill, of excellence, is enforced from the qualified than from the unqualified practitioner. The qualified man is liable in law if he fails to exercise the skill which is ordinarily to be expected from a trained mind, whereas the quack is liable only for gross negligence, inasmuch as those who chose to rely upon his services are not entitled to complain if they are inefficient.

In judging, therefore, of the guilt or innocence of a member, you have but to ask yourselves these questions:—Has he or has he not exercised reasonable care, and has he displayed such knowledge as is ordinarily expected from a person holding his qualification, or has he acted with intent to inflict pain other than to relieve? The decision which you arrive at will at once direct your conduct as to appearing in the witness-box against him, remembering always that a man is not liable for a mere error of judgment, nor should he be held liable for giving effect to one school of thought in contradistinction to the views held by an opposing school. As an instance of this, an adherent of the homœopathic school is not liable because he treats homœopathically, although the allopath would regard his treatment as opposed to true scientific teaching. Where there is room for two opinions no prosecution should be. The treatment of disease is still for the most part founded on theories, and who shall assert that his particular theory is the correct one.

The practitioner is responsible for any opinion which he may give, and I think you will agree with me that it is only reasonable that this liability should attach to him. A client seeks advice because he is in doubt and difficulty, and being liable to pay for it necessarily is justified in acting upon it. He seeks aid in order that he may be guided by reason of his own ignorance; it would be unjust therefore to hold him responsible for the opinion of the expert whom he has consulted. What the profession rightly objects to is the institution of proceedings against a member who may or may not have erred in any particular instance, or who may honestly have expressed an opinion from which a brother practitioner differs.

Many of those who are engaged in the laudable object of lessening pain in the lower animals appear totally unable—and it is not to be wondered at, considering their total absence of scientific or legal training—to distinguish the difference between a possible error of judgment and the intent to inflict pain, or the pain which has been occasioned by gross ignorance or carelessness, and hence prosecutions are often unjustifiably set on foot, and, having been instituted, are pushed with a vigour which cannot be too strongly condemned.

Veterinary surgeons as a body are now highly trained, and the feelings of humanity which most educated men possess are certainly not lacking in them; and if that be so, much care ought to be exercised on the part of those who are engaged in the prosecution of those who are believed to be inducing suffering, and they should not fail to remember that, being vested with great authority, considerable responsibility attaches to the exercise of it.

Lastly, I desire to deal very briefly with the professional aspect of the

subject. I have, I hope, clearly proved to you that social evils of a far-reaching character may result from those prosecutions. I have explained how important it is that practitioners should ever be on the alert when giving opinions; how carefully in all cases they should weigh their decisions before expressing them; how necessary it is that care should in all cases be exercised; and how, above all, the feelings of humanity should prompt the veterinary surgeon in the treatment of his patients. What am I to say with regard to the conduct which should guide us towards a brother practitioner who is in trouble, who to his surprise and regret has a criminal action hanging over his head, maybe on account of an opinion which he gave with the sole object of relieving, not inflicting pain. I feel that perhaps I am about to enter upon delicate ground, and yet it behoves one, I think, to express my sentiments freely, although as delicately as possible. No doubt a strong feeling has developed itself in the profession against those who have felt themselves qualified to give evidence against a fellow-member, and I am not going to deplore that fact, because I believe in the past instances have occurred in which it would have been better if that evidence had not been given. I attribute the error not to the desire to earn a paltry fee, or indeed to any other improper motive, but to the failure to understand the duties which one owes to the profession as a whole, and to each individual member in particular. Do not let me convey the impression that I am of opinion veterinary surgeons should never be prosecuted. What I wish to emphasise is this, that these prosecutions should not be lightly instituted, and that practitioners when called upon to give evidence should, before consenting to do so, carefully ascertain the facts, and thereupon decide how they should act in the circumstances.

I have said enough, I think, to raise a discussion on this branch of my paper. I have but to refer to the question of the defence of the incriminated member. If he is being unjustifiably prosecuted, I am of opinion that every effort should be made to defend him. I care not whether he is a member of this Society or that, it is the duty of each of us to prevent these convictions. The National Defence Society is, I believe, doing good in this connection, but it acts too slowly. Often a fine has been inflicted before the Society moves, and hence the case, instead of being fought before the magistrates, is taken up only upon appeal, and accordingly heavy costs are incurred, when by a little timely assistance these might have been saved. I am not blaming the officers of this Society; at present the machinery for fighting these cases is out of date, and the members might well consult with a view of adopting some method whereby early aid might be given to any member who chose to place the facts of his case before them.

A small committee with power to act in any great emergency ought to be formed, to whom practitioners should be invited to apply. The machinery of defence might then be set in motion ere the magisterial inquiry was held, in which case many more acquittals would be secured. If, on the other hand, the committee, upon a careful analysis of the facts of a case, were of opinion that the practitioner had been guilty of improper conduct, it would refuse to act unless instructed to do so by the voice of the majority of the members of the Society.

Gentlemen, I thank you for the patient hearing you have given me. I trust I have partially filled in the gap. I invite you to discuss my paper if it has interested you, and those of you who may be in opposition to me

will, I feel sure, not hesitate to express your views. We learn by hearing and weighing the opinions of others, which, if destitute of personalities, will especially please us.

THE DIAGNOSIS OF LAMENESS IN HORSES.[1]

BY WILLIAM HUNTING, ESQ., F.R.C.V.S.

THERE are two factors to the formation of a correct diagnosis—the patient and the surgeon. The horse cannot speak, and say "the pain is here." He shows signs of pain by lameness, and the abnormal movement seldom does more than indicate the leg affected. Some horses are phlegmatic and apparently not very sensitive. They permit movements of and pressures on injured spots with little or no indication of pain. One horse with pus under the hoof will exhibit the most acute signs of pain, another will hardly show lameness until the coronet gives evidence that suppuration is about to be visible.

Another kind of patient is so irritable and fidgety that it resents handling, let alone pressure, of parts which are sound. Very little help then do we get from our patients towards diagnosing the seat of their lamenesses.

The surgeon, like the patient, brings to the question varying attributes. Some anatomical and physiological knowledge is essential. We do not all possess this in the same degree. Then, eyes and hands are not all alike. Vision and touch are both improved by training. Even when we have acquired all the knowledge possible of the lame limb by careful examination of its structure and action we are only at the commencement of a diagnosis. We have to weigh and balance all the evidence before we arrive at a conclusion. Possibly want of care and consequent failure to note some tangible symptom is as often the cause of failure as want of the logical power to draw correct inferences. How often has a wrong diagnosis been made simply because a foot was not carefully examined?

As in every other affair, opportunities for experience have a great deal to do with correct diagnosis. Experience cannot be measured by the number of cases a practitioner sees. Two or three cases well observed are more helpful than hundreds only superficially viewed and partially investigated.

With all the care, experience, knowledge, and skill possessed by the average man, diagnosis of lameness will always be a most difficult section of our work. Correct diagnosis is often impossible, and those men who never make a mistake will guard themselves against being found out by substituting "tact" for knowledge. It is much easier to disguise our ignorance than to display our talent, and unfortunately the horse-owner has been taught to believe that some men have a mysterious intuitive power of diagnosing lameness. These "tacticians" decide upon the seat and nature of a lameness and express their diagnosis in few words but in a positive tone. Even when they are wrong, their error in 20 per cent. of cases is never discovered. The horse gets sound in time, and who knows where he was lame—who cares? One master of tact used to say—"Be sure it doesn't break out at the coronet, and it makes little matter where the seat of disease may be." Another advised that in all cases a blister should be applied early, lest a second opinion might be wanted, and he added—"It

[1] Read before the Yorkshire Veterinary Medical Society, January 26th, 1900.

is a very clever man who can tell what is or is not under a blister." Without going so far as to say we should never answer a fool according to his folly—or in other words confess our ignorance to even greater ignorance—I do claim that we might all acknowledge occasionally that we don't know. The example should be set by the older men who have established confidence in the minds of their clients. They could well afford every now and then to confess that they were not omniscient.

The very best way of demonstrating the correctness of a diagnosis is by post-mortem disclosure. How many men make a post-mortem examination of their lame cases? Many practitioners examine the dead horse which has suffered from internal disease, and some of us have more than once been a little surprised at the diagnosis made during life not being quite corroborated by the disclosures of an autopsy. We learn by such events, and are better able to form a correct diagnosis in the next similar case that presents itself. But lamenesses do not lend themselves to post-mortem elucidation. When lameness disappears, the horse resumes work; when it recurs, he is usually sold and lost sight of. When the case is of such severity that he cannot be sold, we may get a post-mortem, but such cases generally exhibit tolerably definite signs of their whereabouts and nature before death.

If every case of lameness had a special set of symptoms according to the nature of the causal lesion and the peculiarities of the part affected, we should soon be able to make our diagnosis with precision. All we should require would be a text-book containing graphic descriptions of all kinds of lameness, and a memory to carry them. Perhaps it would even then be necessary to see one case before we could recognise the next with certainty. When a man with ordinary intelligence has seen and understood a distinctive lameness once, he will probably recognise all similar cases in the future. His first acquaintance with a distinctive lameness—one in which the symptoms are quite diagnostic—must be explained to him by some one who understands it. The man who does not look for himself both clini cally and by post-mortem may see a case fifty times and continue all his life to diagnose it wrongly, as he did at first. In olden day laminitis was credited to shoulder mischief. Navicular disease was only discovered about sixty years ago by Turner, unless, perhaps, Moorcroft had anticipated him. Thousands of cases existed before that time, but Turner made repeated post-mortem examinations and proved to demonstration the seat of the lameness. Not every living practitioner has verified Turner's work, and yet he diagnoses the disease. There may be some quite definite lamenesses now that only want investigation in the dead and living subject to place their diagnosis on a surer basis.

There is probably no lameness which gives more characteristic symptoms than that due to embolism of the iliac arteries. It must often have been seen and not diagnosed until some one more careful than usual made a post-mortem examination and demonstrated the cause. Not very many years have passed since Williams described and Vaughan illustrated the lameness due to want of action in the flexor metatarsi muscle. The symptom of the relaxed tendo Achilles is diagnostic. But until the post-mortem in that case no one had described it correctly and associated the lesion with the real cause. Those who guess, and even those who think, might well be excused for supposing that a relaxed tendon at the back of the leg must have something to do with an injured muscle at the back of the leg.

Take another case. Every man in an extensive practice has seen cases of so-called "dropped elbow." Until Willis and Byerley described post-mortem examinations no one knew that 90 per cent. of such cases were due to fracture of the first rib. They were called "radial paralysis" or "sprain of the caput muscles."

Gradually we are obtaining more knowledge of lameness by post-mortem investigation, but there are still innumerable cases in which diagnosis is difficult, because no definite and striking change either in action or position of the horse takes place. He is lame, but no distinct form of lameness is presented. These cases occur mostly in young horses, and perhaps are more common in the horses imported from America than in our home breeds.

Whenever a practitioner has a case of this sort he should not miss the opportunity of a post-mortem examination if it offers itself. The opportunity does not often occur, but it occasionally happens that a horse dies of some disease or accident when suffering from a puzzling lameness, and then is afforded a chance which should never be lost.

Mr. Wm. Shaw and Mr. W. Willis, working independently, have discovered that slight fractures of the large and small pastern bones are not uncommonly to be found in horses at the horse-slaughterers' yards. Many of these are firmly united, and they vary in degree from well-marked fractures to the smallest "chips" or even lines. These doubtless caused pain and lameness. How many were diagnosed? In the light of these observations a case which came under my own notice a few years ago is interesting.

I was asked to unnerve a horse that had been lame for some weeks. I did so, but the lameness continued. No sign of any enlargement or tenderness was apparent about the fetlock. A post-mortem examination disclosed a small "chip" fracture on the inner side of the upper part of the os suffraginis. The piece of bone chipped off was about $\frac{3}{4}$ inch by 1 inch, and no attempt at bony repair was visible. It was depressed about $\frac{1}{8}$th of an inch.

What value can we put on symptoms? Perhaps if we discuss these very shortly our united experience may throw a little light upon their significance.

Position of Limb.—In cases of rupture of a muscle, tendon, or bone, there may be such deformity as at once to show where the injury exists. In laminitis affecting the fore feet the position of the animal is diagnostic. "Pointing" the foot is almost distinctive, but not always. With the exception of perhaps half a dozen well-recognised positions I fear we get little help from the position of a lame leg. In nearly every lameness a horse flexes knee and fetlock slightly. In some he stands with the foot fairly on the ground.

Movements of Limbs.—When a lame horse is moved the lameness is nearly always aggravated, and in a few cases some assistance to diagnosis is afforded by the way in which the limb is moved. In lameness due to splint I think the fact that a horse walks sound but is very lame when trotted is a most helpful symptom. When a horse drags his toe or shows inability to raise the limb I suspect shoulder lameness with some confidence. When lameness ceases or becomes slight after some minutes' exercise, I accept it as evidence of articular disease. Circumduction of a fore leg I do not consider a reliable sign of shoulder lameness.

Hind leg action affords hardly any guide to the seat of lameness. A horse with an acute sandcrack in the toe moves with nearly the same action as one having a pelvic fracture. The hock and stifle always move in unison. Any limitation of the flexion of one joint affects the other. So long as the flexor metatarsi and the perforatus tendons are sound, hock and stifle must move together. I cannot, therefore, allow that action alone helps us at all to distinguish stifle from hock lameness. It has been said that in hock lameness a horse does not trot straight from you, but that he carries his body diagonally. I do not deny this, but he does the same in many other hind-leg lamenesses.

History.—A correct history of a case often helps one to form a diagnosis. The way in which it first appeared, the intensity of the lameness, its improvement or its persistent continuance, all help.

Age has an important bearing on some ill-defined cases, but in some few cases we find navicular disease make its appearance in a five-year-old horse and splint in an eight-year-old.

Local signs, such as swelling, heat, pain on pressure or movement, are of course most valuable, but they are not always indicative. It is an every-day occurrence to meet with a lame leg showing two or three local changes —an enlarged fetlock, a well-marked splint, and a badly-shod foot. Which is the cause? I remember a case of lameness in which a decided spavin was treated as the cause by two if not three different practitioners. A post-mortem disclosed a fractured navicular bone.

Putting aside the very evident cases in which diagnosis is simple, there are many lame horses presented to us which are difficult problems to solve. The use of cocaine might be more widely resorted to. In a goodly number of cases it is important to know whether the seat of lameness is above or below the fetlock. This distinction can be arrived at by injecting subcutaneously a few grains of cocaine in solution. The best site for injection is on the course of the nerves, just above the fetlock. In a recent case which came under my notice the horse was lame in both fore legs, but worst on the off. He had been lame for some months, and was twice taken to the Royal Veterinary College, where a diagnosis was made of splints. Cocaine was injected above the fetlock of the lamer limb. Seven minutes were allowed to elapse, and then the horse was trotted out. He went sound on the off fore, but lame on the near. This enabled a diagnosis being made of both fore feet as the seat of mischief, and neurectomy proved its correctness.

Cocaine may also be used directly on the seat of a probable cause of lameness, as, for instance, on a spavin or ringbone, and thus diagnosis by exclusion is assisted.

In obscure hind leg lameness it is always advisable to examine per rectum. There is a condition which may be called obturator lameness that can only be diagnosed by a rectal examination. The horse is lame, and when trotted slightly adducts the limb in bringing it forward. This movement may be diagnostic to those who have seen a few cases, but it is not suggestive to those who have not. The history is of slight sudden lameness which perhaps passes off in a day or two. Then lameness increases and remains for some weeks, or it may be two or three months. Then it gradually subsides, and the horse remains sound. The lesion is a fracture of the pubis extending into the obturator foramen. The fracture causes slight lameness at once. The secondary lameness is due to the growth of

the callus formed to repair the injured bone. The callus presses upon the obturator nerve, and this interferes with the action of the adductor muscles. The lameness is greatest when the callus reaches its maximum, and gradually declines as the enlargement subsides and the soft tissues adapt themselves to the condition. The value of a diagnosis in the case is that a prognosis can be given that recovery will result if time be given. For drawing my attention to this lesion I am indebted to Mr. W. Willis, who showed me the first case I ever saw—at any rate the first case of the kind I ever recognised. The callus is easily found by rectal examination.

I have not come here to teach, or I should have entered more in detail into the various symptoms of lameness. That would have been tiresome to an audience of experienced practitioners. What I desire is that out of our united experience some little progress may be effected, or even some errors exposed.

I suggest that more use should be made of post-mortem examinations in cases of lameness, and that the omniscient style of diagnosis should be treated with more contempt than is at present shown it. To correctly diagnose an obscure lameness is always difficult—sometimes impossible. When we differ from another practitioner on such a case it is wise to be sure we are right before calling him a fool.

THE HISTORY OF ANÆSTHESIA.[1]

BY O. CHARNOCK BRADLEY.

"The thick, sweet mystery of chloroform,
The drunken dark, the little death-in-life."

THE nineteenth century is dying, and dying full of honour. In many ways it has been the most wonderful century the world has ever seen. In no way has it been more remarkable than for the advances in medical and surgical science. If we ask, "Whence these advances?" the answer unhesitatingly comes, "From anæsthetics and antiseptic surgery." These two have wrought such startling changes, have made so deep an impress upon human life, that they alone are sufficient to render the nineteenth century for all time unforgotten, unforgettable.

The year 1800 sharply divides the history of anæsthesia into two periods, for it was in this year that Sir Humphry Davy suggested that anæsthesia might be produced by the inhalation of drugs. How Davy stumbled upon the idea is related in his "Chemical and Philosophical Experiments." He says: "In cutting one of the unlucky teeth called dentes sapientiæ, I experienced an extensive inflammation of the gum, accompanied with great pain, which equally destroyed the power of repose and of consistent action. On the day when the inflammation was most troublesome, I breathed three large doses of nitrous oxide. The pain always diminished after the first four or five inspirations, the thrilling came on as usual, and uneasiness was for a few minutes swallowed up in pleasure. As the former state of mind, however, returned, the state of organ returned with it, and I once imagined that the pain was more severe after the experiment than before." Further on in the same book he adds: "As nitrous oxide in its extensive operation appears capable of destroying

[1] Read before the Edinburgh Veterinary Medical Society February 9th, 1900.

physical pain, it may probably be used with advantage during surgical operation in which no great effusion of blood takes place."

Prior to this, insensibility to pain had been sought either by the internal administration of drugs, or by mechanical means. It seems also probable that mesmerism may have been used to this end, for we read of witches, especially in the sixteenth century, being put to death because of their attempt to abolish the pains of child-bed. Women were instructed to gaze fixedly upon a sword or other object; and if we turn to classic mythology, we find that Latina held a palm branch and brought forth Apollo without pain. The Greek and Roman classics contain many references to the abolition of suffering. For example, Theocritus states that "the daughter of Antigone, weighed down with throes, called out for Lucinia, the friend of women in travail, and she with kind favour stood by her and in sooth poured down her limbs an insensibility to pain, and so a lively boy, like to his father, was born."

Turning from these problematic cases, however, it is undoubted that the peculiar state of mind produced by the administration of certain drugs was well known in very ancient times. The effects of Indian hemp were known to the Chinese 1500 years ago; and it has been supposed that Amos, speaking 700 years before Christ, made reference to this drug when he described "the wine of the condemned," partaken of by criminals who were about to undergo torture. Sir James Young Simpson was of opinion that the Nepenthe of the Greeks was some preparation of Indian hemp, and he draws his conclusions from the effect produced by the drinking of the drug as related by Homer. It will be remembered that Helen of Troy drugged Ulysses and his companions in order to encompass her own ends. "She straightway cast a drug into the wine from whence they were drinking, that frees men from grief and from anger, and causes oblivion of all ills. Whoever should drink down this when it is mixed in a cup would not shed a tear down his cheeks for a whole day, not even if his mother and father should die, nor if they should slay with the steel a brother or a beloved son before him, and he should behold it with his eyes." Our own word "assassin" comes from "haschish," one of the many names given to Indian hemp. An Arab sheikh of old got together a band of disciples, and, by administering haschish, persuaded them that it was in his power to ensure their entrance into Paradise. They were thus induced to fulfil all the murderous commands of their unscrupulous leader, and many are the tales that have been told of their fiendish cruelty.

It is interesting to note that Herodotus describes the effects produced by the inhalation of the fumes of burning hemp. Speaking of a tribe of Scythians, he says: "They have a sort of hemp growing in this country, very like flax, except in thickness and height; in this respect the hemp is far superior. . . ." "When, therefore, the Scythians have taken some seed of this hemp, they creep under the cloths, and then put the seed on the red-hot stones; but this being put on, smokes, and produces such a steam that no Grecian vapour bath would surpass it. The Scythians, transported with the vapour, shout aloud; and this serves them instead of washing, for they never bathe the body in water."

Mandrake was another drug used for the purpose of alleviating suffering. Hugo of Lucca used it extensively in the twelfth century, and Theodoric, his son, tells us in his "Chirurgical" how it was employed. "Take of opium, of the juice of the unripe mulberry, of hyoscyamus, of the juice of

hemlock, of the juice of the leaves of mandragora, of the juice of the woody ivy, of the juice of the forest mulberry, of the seeds of lettuce, of the seeds of the dock which has large round apples, and of the water-hemlock —each an ounce; mix all these in a brazen vessel, and then place in it a new sponge; let the whole boil as long as the sun lasts on the dog-days until the sponge consumes it all and it has boiled away in it." In this way the Spongia Somnifera was prepared, which, preparatory to use, was to be soaked in hot water for an hour, after which "it was to be applied to the nostrils of him who is to be operated on until he has fallen asleep, and so let the surgery be performed." It was found, however, that this procedure was risky, as the patient often failed to waken from the sleep thus induced.

In 1784 Moore suggested that anæsthesia of the limbs might be brought about by compression of the nerves. It was tried in Hunter's practice, but the pain produced by the pressure itself was so great that the method was given up. Compression of the carotids was tried by Valverdi and others in the sixteenth and seventeeth centuries, and Fleming endeavoured to revive the practice in the first half of the present century. Neither of these methods, however, were satisfactory, and so they fell into well-deserved neglect.

Although Davy in 1800 had suggested the inhalation of nitrous oxide as a means of producing anæsthesia, it was not until more than forty years afterwards that it was actually used for this purpose. On December 10th, 1844, Horace Wells, a native of Hereford, Connecticut, and practising as a dental surgeon in that town, happened to be present at a popular lecture at which the hilarious effects of laughing gas were demonstrated. He noticed that a Mr. Cooley, while still under the influence of the gas, fell and severely bruised his leg on a bench, but showed no sign of noticing the accident. For a long time Wells had been seeking some agent which would allow him to extract teeth painlessly, and the idea at once struck him that here was the means he sought. As good luck would have it, he happened to be suffering from an aching molar, and he straightway resolved to experiment upon himself. The next day he got a colleague to extract the tooth for him while he was under the influence of the gas. The result was even more than Wells had dared to hope. He therefore proceeded to experiment upon others. So successful was he, that he went to Boston in order to give a public demonstration of his method before a crowd of practitioners and students. Unfortunately the demonstration was a failure, due, it was afterwards said, to the too early removal of the inhaler. Wells and his assistant and former pupil Morton were hissed by the spectators and stigmatised impostors. Poor Wells never recovered from the effects of his failure, and although he did some work afterwards, he died insane in New York two years later.

Wells' misfortune was, as it afterwards turned out, a real gain to surgery, for Morton, his assistant, after the failure of nitrous oxide, cast about for some more reliable drug. In his search and its results he was to be more fortunate than his master.

About 1830 Faraday had shown that ether when inhaled produced much the same effects as nitrous oxide. Morton, learning this, first tried chloric ether, but found the results quite unsatisfactory. At the suggestion of Dr. Jackson of Boston, he decided to give ordinary ether a trial, and, after experimenting upon the lower animals, resolved to try the effects

upon himself. On September 30th, 1846, he shut himself in his room, and, taking a seat in his own operating chair, began to inhale ether from a pocket-handkerchief. Consciousness was soon lost, and we may imagine his state of mind on awakening seven or eight minutes afterwards. From this moment surgical anæsthesia, as we know it, dates. Morton was now very naturally anxious to try the effect upon a patient, and as the Fates were propitious, he had not long to wait, for the same evening an opportunity presented itself. "Twilight came on," he says. "The hour had long passed when it was usual for patients to call. I had just resolved to inhale the ether again and have a tooth extracted under its influence, when a feeble ring was heard at the door. Making a motion to one of my assistants who started to answer the bell, I hastened myself to the door, where I found a man with his face bound up, who seemed to be suffering extremely. 'Doctor,' said he, 'I have a dreadful tooth, but it is so sore I cannot summon courage to have it pulled out; can't you mesmerise me?' I need not say that my heart bounded at the question, and that I found it difficult to control my feelings, but, putting a great restraint upon myself, I expressed my sympathy and invited him to walk into the office. I examined the tooth, and in the most encouraging manner told the poor sufferer that I had something better than mesmerism, by means of which I could take out his tooth without giving him pain. He gladly consented, and, saturating my handkerchief with ether, I gave it to him to inhale. He became unconscious almost immediately. It was dark; Dr. Haydon held the lamp. My assistants were trembling with excitement, apprehending the usual prolonged scream from the patient while I extracted the firmly-rooted bicuspid tooth. I was so much agitated that I came near throwing the instrument out of the window. But now came a terrible reaction. The wrenching of the tooth had failed to rouse him in the slightest degree; he remained still and motionless, as if already in the embrace of death. The terrible thought flashed through my mind that he might be dead, that in my zeal to test my new theory I might have gone too far, and sacrificed a human life. I trembled under the sense of responsibility to my Maker and to my fellow-men. I seized a glass of water and dashed it in the man's face. The result proved most happy. He recovered in a miuute, and knew nothing of what had occurred. Seeing us all stand round, he appeared bewildered. I instantly, in as calm a tone as I could command, asked, 'Are you ready to have your tooth extracted?' 'Yes,' he answered in a hesitating voice. 'It is all over,' I said, pointing to a decayed tooth on the floor. 'No,' he shouted, leaping from the chair. The name of the man who thus for the first time underwent an operation under anæsthesia induced by ether was Eben Frost."

It was a bold stroke on the part of Morton to solicit the privilege of exhibiting the powers of ether in the Massachussetts Central Hospital, Boston, the same institution in which Wells' ill-fated demonstration had been given only two years before. After some delay, permission was granted, and the 16th of October 1846 was set apart for the day of trial. We can picture the scene. The operating theatre crowded with practitioners and students, cold and sceptical, the surgeon waiting with stern set features for the signal to begin his work; the patient lying on the table in that prostration of mental anguish which must have been experienced by all patients in those days. Despite all these adverse and disturbing circumstances, Morton was, outwardly at least, cool and collected; he pro-

ceeded with the administration of the anæsthetic, and at last calmly nodded to the surgeon to begin. No sound, no movement, no indication of pain from the patient from the first cut of the knife to the end of the operation. "Gentlemen," exclaimed the surgeon, Dr. J. Collins Warren, when he had finished, "this is no humbug." Thus ended the first surgical operation under ether. Those who had come prepared to scoff remained to praise.

The good news was quickly spread, and the great surgeon Liston was the first in Great Britain to perform an operation under ether. At first he was of opinion that it would only be serviceable in the practices of rapidly operating surgeons, as it was considered that the inhalation could only be with safety carried on for a short time. James Young Simpson, however, set himself to prove that this was not the case, and was soon in a position to state that the anæsthesia might be maintained for hours if necessary. In January 1847 Simpson gained for the Edinburgh Medical School the proud distinction of being the scene of the first use of anæsthetics in obstetric practice. His acute mind, however, soon perceived the shortcomings of ether, and he could not rest satisfied until he had discovered something better to take its place. To this end he and his two assistants, Dr. George Keith and Dr. Matthews Duncan, night after night, spent hours in the dining-room of No. 52 Queen Street inhaling substance after substance. All the scientific curiosities were unearthed from the laboratories of chemists and tested; the enthusiastic invigorators sitting round the dining-table and inhaling the drugs from tumblers and saucers, much we can imagine, to the alarm of the rest of the household.

Mr. Waldie, a native of Linlithgowshire, practising as a chemist in Liverpool, was the one who suggested that "perchloride of formyle," as it was then called, should be tried. This "curious liquid" had been discovered in 1831 by Soubeiran and Liebig, and its chemical composition had been determined in 1835 by the famous French chemist Dumas. The liquid was heavy and not volatile-looking, and therefore did not attract Simpson, who, instead of trying it, put it away, and apparently half forgot its existence. One night, however, it was brought to light again and tried; the results of the experiment are graphically told by Simpson's next-door neighbour, Professor Miller.

"Late one evening—it was the 4th of November 1847—on returning home after a weary day's labour, Dr. Simpson with his two friends and assistants, Drs. Keith and Duncan, sat down to their somewhat hazardous work in Dr. Simpson's dining-room. Having inhaled several substances, but without much effect, it occurred to Dr. Simpson to try a ponderous material which he had formerly set aside on a lumber table, and which, on account of its great weight, he had hitherto regarded as of no likelihood whatever. That happened to be a small bottle of chloroform. It was searched for, and recovered from beneath a heap of waste paper. And with each tumbler newly charged, the inhalers renewed their vocation. Immediately an unwonted hilarity seized the party,—they became bright-eyed, very happy, and very loquacious—expatiating on the delicious aroma of the new fluid. The conversation was of unusual intelligence, and quite charmed the listeners—some ladies of the family, and a naval officer, brother-in-law to Dr. Simpson. But suddenly there was a talk of sounds being heard like those of a cotton mill, louder and louder; a moment more and then all was quiet, and then crash! On awakening, Dr. Simpson's first impression was mental. "This is far stronger and

better than ether," said he to himself. His second was to note that he was prostrate on the floor, and that among the friends about him there was both confusion and alarm. Hearing a noise, he turned round and saw Dr. Duncan beneath a chair, his jaw dropped, his eyes staring, his head bent half under him, quite unconscious, and snoring in a most determined and alarming manner. More noise still, and much motion. And then his eyes overtook Dr. Keith's feet and legs making valorous attempts to overturn the supper table, or more probably to annihilate everything that was on it. By and bye, Dr. Simpson having regained his seat, Dr. Duncan having finished his uncomfortable and unrefreshing slumber, and Dr. Keith having come to an arrangement with the table and its contents, the *sederunt* was resumed. Each expressed himself delighted with this new agent, and its inhalation was repeated many times that night—one of the ladies gallantly taking her place and turn at the table—until the supply of chloroform was fairly exhausted."

The lady to whom Miller refers was Miss Petrie, a niece of Mrs. Simpson; so carried away was she by her feelings, that just as she was going under she folded her arms across her breast and exclaimed, "I'm an angel, oh, I'm an angel!" Simpson at once began to use chloroform in his midwifery practice, and prevailed upon his surgical colleagues to give it a trial. Accordingly, on November 15th, 1847, three operations were performed by Professor Miller and Dr. Duncan in the old Edinburgh Royal Infirmary, now the City Fever Hospital.

"A great collection of professional men and students witnessed the results, and amongst them Professor Dumas of Paris, the chemist who first ascertained and established the chemical composition of chloroform. He happened to be passing through Edinburgh, and was in no small degree rejoiced to witness the wonderful physiological effects of a substance with whose chemical history his own name was so intimately connected."

Now came a time of battle. Objections to the use of chloroform were raised, and objurgations were poured upon the head of Simpson by professional and lay public alike. Morton and ether were apparently forgotten. Simpson and chloroform became almost interchangeable terms. To Simpson alone was the fight entrusted; at Simpson alone were the revilings levelled. Simpson, unlike Morton, had not sought to keep the composition of the new anæsthetic a secret in order to turn it to pecuniary account; and yet he, and he alone, was held responsible for it. Objections to its use were raised on religious, moral, and medical grounds. The religious objections appear to us now-a-days to have been very foolish; but at the time they had a very real influence in delaying the use of anæsthetics. Quotations against taking away pain were sought in the Bible; but Simpson was as earnest a student of his Bible as any of the objectors. He therefore found no difficulty in quoting texts in support of his position to the confounding of his adversaries. Perhaps his most powerful argument was taken from Genesis ii. 21; "and the Lord God caused a deep sleep to fall upon Adam, and he slept; and He took one of his ribs and closed up the flesh instead thereof."

Moral objections were chiefly directed against the use of chloroform in midwifery. It was asserted that chloroform was quite unnecessary, and the birth of past myriads was instanced as showing how unnecessary it was. The pains of child-bearing, it was averred, were actually beneficial. A letter from the head of the Dublin School of Midwifery is very character-

istic of the attitude of Simpson's professional opponents. "I do not believe," this wise man wrote, "that any one in Dublin has as yet used anæsthetics in midwifery; the feeling is very strong against its use in ordinary cases, merely to avert the ordinary amount of pain which the Almighty has seen fit—and most wisely no doubt—to allot to natural labour, and in this feeling I most heartily and entirely concur." Simpson was very fond of reading this letter to his class, and parodying it by the substitution of the word "carriage" for "anæsthetics," thus—"I do not believe that any one in Dublin has as yet used a carriage in locomotion: the feeling is very strong against its use in ordinary progression, merely to avert the ordinary amount of fatigue which the Almighty has seen fit—and most wisely no doubt—to allot to natural walking: and in this feeling I most heartily and entirely concur."

Against the medical objections Simpson brought so formidable an array of statistics, that opposition was not of very long duration. It was stated that the mortality after surgical operations would be increased were chloroform used. Simpson promptly canvassed the country, and thus brought together statistics so convincing, that victory was his almost from the first.

Such in outline is the history of anæsthesia. Nothing need be said of the more recently introduced local anæsthetics, such as cocaine, chloride of ethyl, &c., as their advent did not cause any revolution such as that attending the introduction of ether and chloroform into surgical practice. How great that revolution was, we, at this time, can scarcely imagine. To fully appreciate the benefits of anæsthetics and antiseptic surgery, it would be necessary to have witnessed the scenes in the operating theatres of our forefathers. In lieu of this, we must endeavour to transport ourselves to those days by means of the word-pictures and the prints that have been handed down to us. "Before the days of anæsthetics," wrote a medical man and old patient to Simpson, "a patient preparing for operation was like a condemned criminal preparing for execution. He counted the days till the appointed day came. He counted the hours of that day till the appointed hour came. He listened for the echo in the streets of the surgeon's carriage. He watched for the pull at the door-bell; for his foot on the stair; for his step in the room; for the production of his dreaded instruments; for his few grave words; and his last preparations before beginning. And then he surrendered his liberty, and, revolting at the necessity, submitted to be held or bound, and helplessly gave himself up to the cruel knife." The scenes, indeed, must have been sickening, and we cannot wonder if a constant repetition of them had an effect upon the surgeon. It is almost to be expected that the surgeon by having constantly to steel himself for the operation, should in time lose some of, at least, the outward semblance of humanity. Tennyson, no doubt, was but acting on a reflex of the general feeling when he penned that repelling picture of a surgeon in "In the Children's Hospital."

> " . . . He sent a chill to my heart when I saw him come in at the door,
> Fresh from the surgery schools of France and of other lands;
> Harsh red hair, big voice, big chest, big merciless hands.
> Wonderful cures he had done, O yes, but they say of him,
> He was happier using the knife than in trying to save the limb,
> And that I can well believe, for he looked so coarse and so red,
> I could think he was one of those who would break their jests on the dead;
> And mangle the living dog that had loved him and fawned at his knee—
> Drenched with the hellish oorali—that ever such things should be!"

That the surgeon of old was not so brutish as he is pictured, we cannot doubt. It is well known that the great Cheselden was seized with a sickening horror at every operation he performed.

How very different is the work to-day! The patient, instead of having a mortal dread of the operation, sometimes longs for it as being the means of relieving his suffering. The surgeon goes about his work strengthened by the conviction that the patient feels no pain, and that after the operation the dread enemy, Sepsis, may be kept at bay.

Instead of the dark, gloomy, and none too clean operating room of yore, whence shrieks and groans proceeded, now the rooms are clean and light. Save a subdued whisper of admiration as the surgeon does some particularly brilliant piece of work; save the occasional clang of an instrument as it is put back into its tray of antiseptic solution; save the heavy breathing of the patient, or a short command from the operator, no sound is heard. The operation is finished, and the patient wakens to find himself back in bed again wondering what has happened. Oliver Wendell Holmes spoke truly when he said, "By this priceless gift to humanity, the fierce extremity of suffering has been steeped in the waters of forgetfulness, and the deepest furrow in the knotted brow of agony has been smoothed for ever."

LABORATORY METHODS FOR THE DIAGNOSIS OF CERTAIN MICROORGANISMAL DISEASES.

BY CHARLES F. DAWSON, M.D., D.V.S., VETERINARY INSPECTOR, BUREAU OF ANIMAL INDUSTRY.

(*Continued from page* 114.)

HOG CHOLERA AND SWINE PLAGUE.

As these two diseases often coexist, it is deemed better to mention them together. Although in some of the text-books their identity is seemingly much mixed, they are regarded in this country as two distinct diseases. The former—hog cholera—is primarily a disease of the intestine, but may secondarily attack the lungs. Swine plague, on the other hand, has its primary seat in the lungs, and may attack the intestine.

The germs of both diseases have been carefully studied and described by Drs. Salmon and Smith [1] as belonging to two distinct groups of bacteria. The hog cholera germ may be classed with the colon group of bacteria, while the swine plague germ may be classed with the hæmorrhagic septicæmia group. So much alike, indeed, are the members of the latter group of bacteria, that it is almost impossible to distinguish one from the other. Their variations are mainly found in the degree of their virulence and range of pathogenesis, and not in their behaviour when leading a saprophytic existence. For instance, it would be a difficult matter to differentiate between cultures of the germs of swine plague, chicken cholera, spontaneous rabbit septicæmia, and a few plagues found in other animals. This group is widely distributed, is very vulnerable, and is sometimes found in the respiratory tract of animals in a state of perfect health. There are many varieties of the germ, each of which may differ in virulence from the

[1] Hog Cholera, B. A. I., 1889, and Swine Plague, B. A. I., 1891.

type. The hog cholera germ is fatal to rabbits, guinea-pigs, and mice, requiring from four to seven days to produce death. Virulent varieties of the swine plague germ will also produce death in these animals, but in a much shorter time—in some instances inside of twenty-four hours.

Hog cholera and swine plague are by far the two most important bacterial diseases in swine. In fact, in any outbreak of disease in swine, if parasitism can be excluded (by this is meant the larger animal parasites), one or the other or both of them may be assumed to exist. The post-mortem appearances are at times quite puzzling. In the *acute* form of hog cholera the animals die suddenly, showing on examination a hæmorrhagic condition in the heart muscle, the meso-colic, bronchial, and thoracic lymphatic glands, and infarcts in the kidneys. Hæmorrhages beneath the thoracic and abdominal serous membrane are of frequent occurrence. The subcutaneous tissue also partakes of this general hæmorrhagic condition. Here it is indicated by bluish blotches on the ventral aspect of the body. In some cases blood tumours form in the superficial muscular tissue. The mucous membrane of the stomach is usually deeply reddened. Sometimes there may be direct hæmorrhages into the stomach. In some cases the mucous membrane of the small intestine is dark red in colour. No ulcers will be found in these acute cases. The *chronic* form is more common, and in this the disease is most manifest in the large intestine. The other organs become affected secondarily by degenerative processes through the absorption of poisons and the invasion of the bacteria from the intestine.

The disease in the intestine consists of the production of ulcers, or buttons. These may be circular and projecting or depressed and ragged in outline. They appear most frequently in the cæcum and upper half of the colon. The stomach is sometimes ulcerated. The spleen, unlike in the *acute* form, is not always enlarged.

In swine plague the primary seat of the disease is to be looked for in the lungs. Here there is inflammation and small and large necrotic cheesy areas. The serous membranes also partake of the inflammatory process, and by the formation of fibrinous material become adherent. When the disease invades the intestinal tract, which it frequently does, there will be congestion or inflammation of the mucous membrane, followed by fibrinous deposits. The lymphatic glands often become involved secondarily. In these two diseases a bacteriological examination and a histological study of the tissues from typical bases are often the means upon which we may absolutely rely.

The swine plague organism may be obtained with ease and with certainty from all the organs, including the blood, of a rabbit inoculated with swine plague material. At the point of inoculation there will appear more or less necrosed tissue with zones of active inflammation surrounding it. If a drop of the blood be placed upon a cover-glass and is scraped off with the ground edge of a slide, a thin film of blood will remain on the cover-glass. This is to be dried and fixed by heat in the usual way. A drop of alkaline methylene blue spread out upon the film will stain the bacteria immediately. The surplus stain is washed off in water, and the specimen is examined with an oil-immersion lens. An oval bacterium will be seen. Similar preparations should be made from the spleen, liver, and abdominal exudate, if any. The organism has a peculiar property of staining deeply at the ends. This may be plainly brought out by dipping the stained preparation made from the spleen or abdominal exudate for a

second into three-tenths per cent. acetic acid, care being taken to remove the acid by subsequent washing in water. The centre is completely decolorised, while the ends retain the stain. So transparent does the central portion become that the stained ends may be mistaken for cocci in pairs. Careful focussing will, however, reveal the unstained central portion. This occurs only in preparations made from animal tissues. In cultures the organism takes the stain uniformly.

In a case where hog cholera and swine plague coexist, the experimental animal, if a rabbit, will die of swine plague, and the hog cholera germ will have no relation to the fatal issue. In these cases it is manifest that the hog cholera germ could not be so isolated by the inoculation of rabbits, because of the rapidity with which a fatal issue ensues. The hog cholera germ requires from four to seven days to kill a rabbit or guinea-pig. We may resort to making cultures from samples of tissue at hand. This is done by thoroughly grinding the tissues obtained under aseptic precautions in sterile water, and making plate cultures from the extract. The different colonies may then be studied and the two organisms isolated. Assuming that there are only two species present, if we find two different colonies and upon examination preparations from one colony show a rapidly motile bacillus, we may provisionally call it the hog cholera bacillus, while, on the other hand, if it is nonmotile it could be assumed to be the swine plague bacterium. Experiments upon rabbits would clinch the matter. The inoculation of a rabbit with two tenths cubic centimeter of a bouillon culture made from the suspected hog cholera colony ought to require from four to eight days to kill, according to its virulence. The disease in rabbits is characterised by pin-head sized necroses in the liver and a dark swollen spleen in which the germ is plentiful.

The culture made from the suspected swine plague colony into bouillon ought to kill a rabbit in twenty-four hours in one-half cubic centimetre dose injected subcutaneously. In some cases, where the germ at hand is a weak one, a much longer time may be required, even seven days in extreme cases. On post-mortem examination of these cases the experimental rabbit will not show the usual acute septicæmia, but an extensive peritonitis. The cæcum, liver, and spleen will be covered by a thin false membrane which contains large numbers of swine plague bacteria, while the liver and blood will contain very few. The swine plague germ will not grow in a temperature as low as 70° F., while the hog cholera germ will do so. Making plate cultures and keeping them at this temperature would be another way of isolating with some degree of certainty the hog cholera from the swine plague germ.

About a year ago the writer [1] published a method for diagnosing hog cholera in live animals, basing the method upon the Widal serum reaction, now so extensively used in diagnosing typhoid fever in man. Since then, ample opportunity has shown the method to be of value. The mode of procedure is as follows: A drop of blood is obtained from the cleansed ear of a hog or experimental rabbit, and is smeared over a cover-glass in the usual way. As few corpuscles as possible should be present, as they interfere mechanically with the reaction. About ten times as much sterile water is added to the film of serum on the cover-glass. To this diluted serum is added the smallest possible quantity of the hog cholera germs from a culture on agar twenty-four hours old, or a loop of a culture in bouillon

[1] New York Medical Journal, February 20, 1897.

twenty-four hours old. (The test culture should always be first examined for the presence of motility and the absence of clumps of the organism.) The cover-glass so prepared is now inverted on a concave slide and observed with an oil-immersion lens. If the case is hog cholera, the hog cholera germs which were noticed to be actively motile and swimming independently of each other in the test preparation are now losing their motility and massing themselves in clumps. The reaction sometimes occurs immediately, or it may require from one-half hour to one hour. No such reaction has been observed in swine plague, nor does it occur under these conditions with other organisms. The method is therefore a ready one for the diagnosis of hog cholera. The reaction indicates the presence of hog cholera, but neither the absence nor presence of swine plague. This method could be made use of in differentiating the germ itself by making blood preparations from a known case of hog cholera and proceeding as described above for the diagnosis of the disease. The culture which gave the clumping and agglutination of bacteria could be called hog cholera.

Starting with the two germs obtained from an outbreak where there is a double infection of hog cholera and swine plague, they could be studied and identified as follows:—Obtain cultures from dissimilar colonies on the plates as indicated above. Inoculate from each of them several tubes of media as follows: Two or three fermentation tubes of glucose bouillon, two or three gelatine and agar plates, and several tubes of potatoes, and incubate them at 38° C. for several days. Allow the gelatine plates to remain at a temperature of 65° to 70° F. If the fermentation tubes show the development of gas in the next day or two, and it contains a single species of a rapidly motile organism, the probability is that the culture is one of hog cholera; it is certainly *not* one of swine plague. One or more of the fermentation tubes may not show gas formation. If these cultures which have not formed gas show in a hanging-drop preparation a non-motile organism, it is not hog cholera, and is probably swine plague. If a brownish growth is visible on the potato tubes, it is not swine plague, and may be hog cholera. If the surface of the potato is moist and glistening, the almost invisible growth is probably swine plague. No growth ought to take place on the gelatine plates inoculated with the suspected swine plague organism at low temperature. If growth has taken place, and it consists of a motile bacillus, the culture is possibly one of hog cholera. In ordinary tubes of bouillon and upon the incubated agar plates, the odour would also be a diagnostic point. If the culture be a pure one of the swine plague germ, the odour will be that of putrefaction, while the cultures, if of hog cholera, would be odourless. Bringing together of these points, testing the pathogenesis in the smaller animals, excluding the possibility of having obtained mixed cultures at the start, or subsequent contaminations, would furnish a correct diagnosis.

There are four important microorganismal diseases in poultry in which the causes are well known. They are chicken cholera, infectious leukæmia, tuberculosis, and entero-hepatitis or black head.

CHICKEN CHOLERA.

Chicken cholera is a disease characterised by the sudden onset of high fever, profuse diarrhœa of a greenish tinge, darkened mucosa from congestion, and the presence of a bacterium in the blood resembling in all its

biological characters the germ of swine plague, and of rabbit septicæmia. The fowls become comatose and die suddenly in large numbers. The writer has never observed an outbreak of genuine chicken cholera, but a bacteriological study of the disease would be all that is sufficient for its recognition.

There could be no difficulty in diagnosing the disease with laboratory facilities. The presence of the peculiar germ in the blood during life in large numbers and the clinical symptoms could leave no doubt as to its identity in the mind of any one who had ever studied the hæmorrhagic septicæmia group of organisms to which the germ of chicken cholera belongs. The biological characters would correspond very closely to those of swine plague.

INFECTIOUS LEUKÆMIA.

Infectious leukæmia is a very important fowl disease. The clinical history is so pronouncedly like that of chicken cholera that there can be little doubt of its being often mistaken for that disease. It is possible that most of the reported outbreaks of chicken cholera are in reality outbreaks of infectious leukæmia. This disease was first described by Dr. V. A. Moore in the twelfth and thirteenth annual reports of the Bureau of Animal Industry, and is probably the most important one which occurs in poultry at the present time in this country. The fowl becomes suddenly dumpish, the feathers are ruffled, the eyes are closed, and there is a condition of drowsiness in which the head falls back; the comb and wattles early become congested, this is followed in a short time by extreme paleness, in fact the comb becomes almost empty of blood during the last days of illness. The temperature reaches from 110° to 112° F. The blood becomes very thin, losing a large number of corpuscles daily. There is a profuse diarrhœa. These discharges contain an enormous number of the *bacterium sanguinarium* which causes the disease. In cases of the disease artificially produced by feeding the animals upon grain infected with the germ, they live about eight days. After death no particular lesions, other than the engorgement of the hepatic capillaries and the extreme thinness of the blood, are noticed. If lesions occur elsewhere, as in the liver, they are probably due to the mechanical plugging of the capillaries by the bacterium. The germ may be readily isolated from the blood or liver. Smear preparations from these organs indicate the relative scarcity of the organisms. They are found most plentifully in the intestinal contents. The diseased fowls sometimes recover. The causative organism is a short bacterium in pairs, devoid of movement, measuring 1 micron in width from 1.2 to 1.8 microns long. It grows well in all the ordinary media at the room temperatures. It coagulates milk in one day. In hanging-drop preparations the cellular protoplasm is seen thickened at the ends. In stained preparations the centre is either transparent or very lightly stained. The periphery of the cell is densely stained. The organism does not form gas in the presence of sugars. It will grow fairly well at 13° C. It is killed in thirteen minutes by exposure to 58° C. Freezing has no deleterious effect upon it. It will resist drying in diffuse sunlight for three weeks. A 1 per cent solution of carbolic acid is fatal to it in three minutes. It will kill rabbits when inoculated into them intravenously in three or four days. Guinea-pigs die in from five to eight days when inoculated subcutaneously. Pigeons inoculated intramuscularly die in about three days.

Healthy fowls placed in cages which retain the droppings of the sick ones contract the disease in some cases. The disease can also be produced by feeding fowls with grain infected with cultures of the organism.

TUBERCULOSIS IN FOWLS.

Tuberculosis in fowls is a comparatively rare disease, but the possibility of an outbreak should be borne in mind. The disease is not considered identical with that of man. There are important differences between the germs of the disease in man and in fowls, probably due to environment. These differences occur not only in their biology, but in their pathogenesis as well. In fowls affected with the disease tubercles appear as hard, horny, or soft, cheesy swellings on the skin and joints. There is great emaciation, and they die after having shrunken to a mere mass of skin, bone, and feathers. A post-mortem examination will show little yellow cheesy tubercles in the liver and spleen.

In 50 per cent. of the cases the intestinal form will be observed. Here tubercles appear as dense round masses in the intestinal wall. The lungs and serous membranes, as in other animals, may be attacked and become infiltrated with the disease.

A histological study of the tissues could be carried out by means of the same methods as indicated for the affection in mammals. In avian tuberculosis one of the important characters of the mammalian variety is said to be absent—that is, the giant cells.

ENTERO-HEPATITIS, OR BLACKHEAD.

Entero-hepatitis is a disease which exists to a considerable extent among turkeys. It occurs mainly in Rhode Island, where large numbers of turkeys are raised. The disease was first described Dr. Theobald Smith, who claimed that it is caused by a parasitic protozoan, named by him *Amœba meleagridis*.[1] The parasites enter the digestive tract along with the food. They become lodged in the cæca, where they set up an inflammatory process, which results in partial closure of those parts of the intestine from great thickening and ulceration of their walls. The cæca sometimes becomes distended and very large from accumulations due to the disease process. From the cæca the parasites reach the liver, where they start up a violent inflammation, which results in the formation of yellow and green areas of necrosed tissue. The liver is generally much enlarged and engorged with blood. The disease seems to attack turkeys when they are quite young, as the progress made by it corresponds, as a rule, with the age of the turkeys.

In addition to the study of the clinical history and autopsies upon the bodies of the dead turkeys, which reveal the peculiar disease in the liver and great thickening of the walls of the cæca, the micro-parasite can be demonstrated in the stained sections of the liver and intestinal wall when prepared by the usual embedding and staining processes. Dr. Smith found that Delafield's hematoxylin and eosin gave the best general results as stains. The parasite appears as a nucleated body, measuring from 6 to 10 microns in diameter, having in sections stained with hematoxylin and

[1] Bulletin No. 8, United States Department of Agriculture, Bureau of Animal Industry.

eosin a bluish red tint more feebly stained than the surrounding tissue nuclei. It has not been observed as an intracellular body, but appears in the interstices and lymph spaces of the tissue.

ROUP (DIPHTHERIA).

Roup is very prevalent in poultry, more particularly among chickens. It is sometimes called diphtheria, from the fact that it is characterised by the formation of diphtheritic membranes in the air passages, notably in the nose, upon the pharynx and larynx, and also upon the tongue and eyes. As a first symptom of the disease will be noticed a watery secretion from the eyes and nose, followed by loss of appetite, coughing, sneezing, and obstructed breathing. At this time an examination of the larnyx will reveal a thin grayish yellow membrane of recent formation upon the red and swollen parts. The discharge is characterised by a grayish yellow fibrinous exudate, which forms thick layers on the parts named. Attempts to remove it entirely will cause bleeding, showing its intimate connection with the tissues upon which it rests. In many cases the exudate is very profuse, becomes desiccated, and interferes with respiration from laryngeal obstruction, or with prehension of food by causing immobility of the tongue. In other cases the exudate accumulates upon the cornea, causing agglutination of the eyelids and consequent destruction of the eye from pressure. In these cases the fowl presents a sorry picture. The whole eyeball sometimes disappears, and in its stead is found a globular mass of cheesy material pushing the closed lids out to the utmost. When the discharge becomes infected with the organisms of decomposition a peculiar nauseating odour is noticed. There is rapid loss of strength, roughened feathers, and drooping wings.

In some cases the disease attacks the intestine, causing bloody discharges and rapidly fatal results. In other cases the disease may assume a chronic form in which the symptoms are more obscure, and in which a local disease may not be present. The disease varies in duration from a few days to a few weeks, according to its being acute or chronic in character. The acute form is very destructive, causing the death of a large number in a few days. In the chronic form few deaths occur, but on account of the depression caused the fowls are of little use for food purposes. There seems to be little or no basis for the claim made by some that this disease is the same as diphtheria in man. Were they identical, the same methods of isolation of the germ could be employed as in diphtheria in man. Lœffler has described a bacterium which he calls *Bacillus diphtheriæ columbrarum* as being the cause of a disease in pigeons having the general characters of roup. In this country Moore, in studying roup, described several species of bacteria, one of which is probably identical with the one described by Lœffler. It is a member of the hæmorrhagic septicæmia group of organisms, and was similar biologically to the bacterium of swine plague. In pathogenesis also, it was similar to a somewhat attenuated swine plague organism.

In studying an outbreak of this disease bacteriologically, the exudate from the mouth, throat, nose, and eye of the affected fowl is ground up in salt solution, and varying quantities (from 0·5 cc. up) are injected subcutaneously into the small experimental animals—rabbits, guinea-pigs, mice, fowls, or pigeons. If injected intravenously, the extract should be freed of solid particles by filtration. Scarification of the mouth parts and

cornea and rubbing pieces of the exudate upon the abraded surfaces would also be logical. Little could be hoped from experiments in feeding, but they would be necessary in order to make the investigation more complete.

In case a microscopic examination of the exudate showed few bacteria, cultures should be made from them, and used as suggested above for the exudate.

Common colds and infectious catarrh are often mistaken for roup. The existence of these may be suspected when there is absence of the characteristic membranes in the air passages.

NODULAR TÆNIASIS.

Although this is not a microorganismal disease, its gross pathology is so strikingly like that of intestinal tuberculosis that it is included in this series.

The disease was first described as occurring in fowls in this country by Dr. V. A. Moore,[1] who determined the cause to be a tapeworm which embeds itself in the intestinal mucous membrane and causes the formation of the nodules. The parasite is quite small and might easily be overlooked in a macroscopic examination. In case of doubt, careful washing of the mucous membrane by a gentle stream of water will reveal the small worms attached.

Unlike tuberculosis, there will be no lesions in the liver or other organs in this disease. The fact and the presence of the small tapeworms embedded in the intestinal tumours would exclude tuberculosis.

NODULAR DISEASE IN SHEEP.

A nodular disease of the intestine occurs very frequently in sheep. It has been mistaken for tuberculosis. It is caused by a nematode (*Œsophagostoma columbianum*), first described by Cooper Curtice.[2]

The disease can only be diagnosed post-mortem. The sheep will be generally debilitated—the eyes and lips bloodless, the sides and flanks thin, and the wool dry. There may be an excessive diarrhœa, followed by death in severe cases. It is an insidious disease, and is characterised by the formation of nodules in the mucous membrane of the intestine. When these tumours become numerous they interfere with the digestive functions of the cæcum, and cause the asthenic condition commonly noticed in outbreaks of the disease.

If some of the larger soft characteristic tumours from the intestine be slit open and their greenish cheesy contents be broken up in water, a small round worm, measuring 3 to 4 mm. in length, will be found. This is the embryonic stage, and it has been shown by Curtice that it is during this stage in the life history of the parasite that it enters the mucous membrane of the intestine and causes, by its activity, sufficient irritation to produce the nodules. The adult may be found free in the contents of the large intestine, and measures from 12 to 18 mm. long.

As it is not the intention of this paper to discuss other than microorganismal diseases, the writer will refer those interested in the life history of this parasite to Curtice's work. Sufficient has been said to direct attention to these nodular diseases in fowls and sheep to prevent their being confounded with intestinal tuberculosis, and to give very brief methods of determining their presence.

[1] Circular No. 3, Bureau of Animal Industry.
[2] Animal Parasites of Sheep, Bureau of Animal Industry.

CASTRATION OF THE HORSE IN THE STANDING POSITION.[1]

BY DAVID CRABB, ESQ., M.R.C.V.S., NEW ABERDOUR.

I AM not going to give you a long address. The operation itself could be described in a few words. I once asked an old man for a certificate of character. After he had written it out and handed it to me he said, "You may not think much of it, but it's all true, and we'll see what they can take out of it." So if you can take anything out of the few remarks that I make which will cause a good discussion, I shall be thoroughly satisfied. The reason why I have chosen this subject is from a discussion that arose after the close of the last meeting here in August. Some gentlemen here present made the remark that they did not believe in castrating horses standing. At one time I did not have much belief in it myself, but one has to change one's opinions and mode of operations if one wants to keep up with the times. I remember the first horse I castrated standing. I had done other four colts at the same farm. When the owner said to me that he wanted the other one, a four-year-old Clydesdale stallion, done standing, I told him I could not do it as I had not the instruments with me. After making arrangements when I could do it, I went home, wrote my friend Mr. John Beattie, Longside, asking him if he could lend me his ècraseur for a day or two. I had it by return of post, along with a few hints, for which I was thankful. Next day I went and operated on the four-year-old stallion, and being a big animal, there was no trouble in getting hold of the testicles, and the stallion did very well. I will now describe the operation as I do it myself. I have never seen any other veterinary surgeon operate in the standing position. I know there are men here who have done it some years before I began. I may tell you this, gentlemen, had I not begun to castrate horses in the standing position when I did, very few would I have castrated in the recumbent. The standing position was getting so popular with farmers, that one had to throw aside all prejudice and give it a fair trial.

We will now suppose that the colt is in perfect health, no hernia, no cold,—in fact nothing about him to prevent the operation being performed. I prefer having the colt in a stall in the stable where there is plenty of light. I don't believe in doing it outside, as is done by some practitioners. Before you begin have your hands and instruments well disinfected with some antiseptic. I always use Jeyes' Fluid myself. In fact I get a pailful of tepid water into which I pour a little Jeyes' Fluid, which is very handy. It is better to have two men, one holding the colt by the head, the other to hand you your instrument. It can be done with one man, but it is better to have two or more. Before you begin to operate put on the twitch, which is held firmly by the man at the head. Stand at the near side of your colt, grasp the testicle with the left hand. It does not matter very much which testicle you take away first; but if there is a small one, or one not very well developed, take it away first. Grasp it with the left hand, take your knife in your right, and make a long incision; don't be afraid to make a large wound. Your assistant, if you have one, puts the ècraseur into your hand: slip it over the testicle, get it above epididymis, then get in the slack of your chain: keep twisting the screw till the testicle drops off.

[1] Read before the North of Scotland Veterinary Medical Society.

Give your hands and instrument a dip in the pail of water, do the same with the other testicle, and the operation is over. This then, gentlemen, is the standing operation, and it is done as quickly as I have described it. It is a beautiful operation, and the beauty of it lies in its simplicity. Now I claim for the standing operation a few advantages over the recumbent position. First of all you do not hurt the animal,—at least there is not the risk of injuring that there is in casting. I suppose there is not one of us but at one time or another has known perfectly well that the colt has come to grief at the time of castration; perhaps we would not readily own it. In the standing position colts do not struggle so much as when lying on the back or sides, as some prefer to have them. It is only natural that a horse lying on his back will struggle, and it is then that accidents occur.

I do not say that in the standing position they stand like an old sheep, but this I will say, they stand remarkably quiet when one considers the operation that is performed. The only thing to prevent is their lying down, and that they will sometimes do, but just get them on their feet again. The man at the head can keep them lying down; just give the twitch a slight toss now and again. It takes the colt's attention away from the testicles, and it is wonderful how quiet they stand. Some practitioners take them outside, and when the colt moves backward or forward the operator moves with them, and by so doing it prevents them lying down. I think this is where the acrobatic part of the performance comes in. A horse has far more liberty to throw himself down outside than in the stall; in the stall one could keep him up with an extra man or so. Should he lie down outside, don't go stride-legs over his back, for when you begin to tighten the chain he will at once spring to his feet, and the consequences to the operator might be serious.

Others object to the standing position because they say you and I get kicked. I have castrated in that position for the last seven years, and have never been kicked once. Others put forward the argument that it is not scientific; you can't hold them. That's all nonsense. When once you get a hold of the testicle of a horse there is no more trouble.

There is another advantage,—the short time it takes to do the operation. I have said you require two men, but I have done it over and over again with only one man at the head. By the old method one had to send word to the farmers to keep their colts in the house, and what time you would be there, so that the men would be at hand.

All that is done away with. You go to the farm, operate on your colt, and you are away before any one knows you are there. The standing operation is very handy for those who do their work by bicycle; all they require to carry is their ècraseur, twitch knife, and a bottle of Jeyes' Fluid. With a bicycle one could hardly carry wound round their body 40 or 50 feet of rope.

Some practitioners say again that it is unsurgical, because you can't get the parts disinfected. I never did it even when I castrated horses, and there is no necessity so long as your hands and instruments are well disinfected. Attempts have been made to get immediate union of the scrotal wounds: the idea has not made much headway, mainly because the results were not satisfactory.

I have seen one now and again heal by the first intention and do all right. If there is one drawback to the standing operation, it is the smallness of the wound that one gets made, because it heals up too quickly; pus must

form. There is another thing I would recommend, get your clients to castrate their colts early. My reasons for doing so are, you are not troubled with bleeding; when later on in the season colts begin to manufacture fresh blood, and the tissues get much softer and a greater tendency to bleeding. One other advantage over the old method, no blood can get into the peritoneal cavity; some practitioners say it does no harm, it can do no good. I have had no trouble with bleeding for some years.

SOME TRAUMATIC DISEASES OF THE HORSE'S FOOT.[1]

BY DUNCAN CUMMING, ESQ., M.R.C.V.S., CULTER.

I HAVE only taken some of the traumatic diseases, as to treat them all would require a volume instead of a short paper. I will deal first with fractures of the bones within the hoof.

Fractures.—The bones within the hoof are the coronary, pedal, and navicular; fracture of these bones cannot be detected by manipulation, as can similar accidents to other parts of the limb, nor can we base our diagnosis solely on negative symptoms, for there are small fractures of the large pastern bone causing very similar symptoms. Extensive fractures do afford some indication of their presence, even crepitation may be heard in bad cases. In most cases some swelling at the heel and round the coronet is detectable after the injury. Slighter fractures are accompanied by very little local change; and we trust to the absence of any injury to other parts of the limb to the history of the case, which may disclose direct injury,—to the great amount of pain, its sudden appearance, and the refusal of the horse to put any weight on the limb. The symptoms point equally to fracture of any of the three bones, and I know no method of differentiating between fracture of pedal, navicular, or os coronæ.

Os Coronæ.—Fracture of the os coronæ may occur from external violence, as from any heavy object falling on the foot, most commonly caused by concussion during a fast pace. It would seem as if a false step were necessary to produce the injury, and that weight be thrown on the bones when from some want of co-ordinate movement they are not in their relative positions. So long as the phalanges retain their sloping position to the cannon bone, a mis-step would probably affect the tendons or ligaments, but if weight were thrown on the foot when the phalanges were straight, then direct concussion would occur and fracture result. It is quite possible that the lower segment of the bony limb might be predisposed to concussion by a disproportion of the foot, especially by having the heels too high, or it might be the position of the foot due to high calkins.

Pedal.—The pedal bone may be fractured in the same way as the pastern bones. Fracture also occurs from external violence, as when the foot is run over by the wheel of a heavy vehicle; nails passing through the sole may also occur from a very slight injury.

Navicular.—Fracture of the navicular bone is not uncommon in old cases of navicular disease; it may occur after neurotomy has been performed for navicular disease; it may also occur in horses free from navicular disease as a result of concussion.

Treatment.—The treatment of fracture of the bones within the hoof is

[1] Read before the North of Scotland Veterinary Medical Society.

not very hopeful. We should be guided in what we recommend by the age and value of the animal and the intensity of the lameness. We may advise slaughter, neurotomy, rest in slings, and blister.

Treads.

Treads, if neglected, are one of the most serious injuries to the horse's foot. Sometimes the skin over the coronet is deeply wounded and portions of the tissue destroyed; such a wound is very liable to become affected with pus-producing germs. Sometimes a tread does not penetrate the skin, but it so bruises the tissue as to cause a deep slough, and then we have a wound favourable to the invasion of organisms.

Treatment.—Every one has noticed how some treads, even although severe, heal rapidly with very little attention; in other cases, which at first seem slight, the gravest symptoms follow. The condition and surroundings of the patient have a great influence on the wound. A tread in a greasy-legged cart horse, whose surroundings are not in the best sanitary condition, is a very serious matter, whereas in a healthy young animal, where the surroundings are clean and healthy, they generally heal very quickly. In treating a tread I have the hair cut off round the wound, remove part of the horn as far below the wound as will allow plenty of drainage. I do not believe in applying warm poultices to treads where you have a deep wound, as it relaxes the tissues, and pus is more apt to burrow down below the hoof. If there is much pain, I use a cold antiseptic poultice, if not much pain, carbolised tow fixed in position by a bandage.

In cases where there is no wound, but where a slough is likely to take place, a warm poultice helps the slough to separate, or better, put the foot in a warm antiseptic bath when the slough separates. I apply astringent and antiseptic dressing.

Pricks.—This is an injury which I am led to believe is less common now than formerly. Blacksmiths are getting more efficient in shoeing, and the nails are improved. The cause of pricks is want of proper care in making, fitting, or driving the shoe. In my opinion most pricks occur from the shoe not being properly holed; either the holes are too heavy or have too great a slope inwards. There is also a danger when the shoe is let too far back at the toe. I have seen country smiths, to save work when the shoes were worn only on the outside, change them to opposite feet. As shoes are heavier punched on the outside than the inside, the danger of pricks is obvious.

With regard to which of the nails the mistake is oftenest made with, I have found the first, third, and fourth nails on the inside the most common. The second nail on the inside is generally the first to be driven in putting on a shoe, and there is not so great a chance of making a mistake.

Symptoms.—In a severe prick the horse evinces pain when the nail is driven, and refuses to put his foot to the ground when the blacksmith lets it go. In this case the nail is withdrawn immediately, and unless pus forms later on there is no more trouble. In less severe pricks the horse may go a little lame when he leaves the forge, and by the time he has walked two or three hundred yards he is sound again. He may show signs of lameness again after he has been standing for a while, or lameness may not be seen again for some weeks, when he will get suddenly lame. By that time pus will have formed.

Treatment.—Remove the shoe, and in most cases we will be able to detect the offending nail or nails. If pus is present it will escape when the nail is withdrawn. The pus is generally of a dark colour. I presume the colour is due to the presence of the iron. I have noticed that when a foot has been pricked and the nail drawn immediately, when pus formed, it was of a yellow colour. In cases of ordinary pricks, if the wound is cleaned well out, and the foot put for a few days in a cold antiseptic poultice, the horse will soon be able to go back to his work. Other cases we get are more difficult to deal with. We get the horse with a temperature of 104° to 106° F., refusing all food, standing with their heads jammed up in a corner of the stall, absolutely unable to put the foot to the ground, and suffering extreme pain. In such cases it is only a waste of time trusting to poultices, fomentations, and morphia. What is the cause of the pain? It is the inflamed tissue confined between the unyielding horn on one side and the unyielding bone on the other. The quickest way to relieve pressure is to strip the hoof, and that freely. In most of these cases we have a portion of necrosed laminae, to which may be attached a thin plate of the pedal bone. In stripping the hoof I have never seen it necessary to cast the horse, although in some cases that may have to be done. In fact I think it would be best to have the horse cast and chloroformed; it would make the operation much easier both for patient and operator. In stripping with the horse standing, get a smith to hold the foot on his knee, have the horn rasped thin, then strip with the knife from the coronet downwards until the wall is as thin as writing-paper; have it slit up in all directions with a strong abscess knife or bistoury. The shoulder of horn just below the coronary cushion is difficult to divide, but unless it be divided our work is of little use, as it acts as a bond binding the foot together. I have seen the divided ends, by the next day after an operation, retracted about half an inch. We may then have the foot washed with a strong antiseptic and placed in an antiseptic poultice, or, better, in a warm bath with some antiseptic added, and immerse as much of the leg as possible. Any necrosed laminæ will be easier removed after the foot has been poulticed or kept in a warm bath for a week, or by that time they may come away themselves. When the pain subsides, dress the foot with carbolised tow or any antiseptic dressing. But in spite of all our treatment septicæmia may supervene and the case terminate fatally.

Picked-up Nails.—This is a very common and very serious injury to the horse's foot, and occurs oftenest in cart horses. The nail may be found in any part of the sole, but I have found it most situated on the side of the frog, about one inch posterior to the joint.

Symptoms.—If the nail be short and clean there will perhaps be no symptoms shown for a few days. Then the horse may take a mis-step or step on a loose stone, when he will go suddenly lame. In cases where the object picked up is large or penetrates to any depth the lameness is shown immediately.

Treatment.—If the wound is caused by a small object, all that is required is to clean the wound out well; apply an antiseptic poultice for a few days, when the horse will be all right. In cases where the sharp object is large, and we are in doubt how far it has penetrated important structures, the case is more serious. I believe in thinning the sole until it yields to pressure by the thumb, and removing most of the horny frog, and rasp down the lower surface of the wall for about an inch round the wound; pare the

sole until blood is appearing, and make a cross section over the wound. This insures that any pus which is likely to collect will get exit, and the thin sole helps to relieve the tension caused by the inflammation of the vascular tissue. These cases sometimes give little or no trouble; in others again no end of complications occur. We may have the corono-pedal articulation opened; abscess may form at the heel and round the coronet. I recollect one case where the pedal joint was opened, and synovia escaping at wound at the side of the frog. The foot and lower part of the limb was washed with a solution of corrosive sublimate. A little boric acid was dusted on to the wound; then a small pledget of cotton wool saturated with clove oil placed over the boric acid; then more boric acid and cotton wool, and had the foot wrapped up in aseptic tow. The dressing was renewed every day, and discharge stopped in four days.

In cases where abscesses break out round the coronet, we have to thin the wall as far down as will relieve the pressure, and slit it up as in stripping. Where there is little to be seen, but lameness still remains, I believe in applying a blister round the coronet.

Corns.—I think this is one of the commonest injuries to the foot of the horse. Corns are oftenest found on the inside heel of the fore foot, more rarely on the outside, and very rarely in the hind feet. Mostly light horses are affected, and we find corns in all kinds of feet, but those found in feet where the heels are weak are the most apt to suppurate.

Cause.—The cause of corns is shoeing very seldom. We get corns in unshod horses. Leaving the shoes too long on the feet, the shoe goes forward with the foot; the foot spreads over it, and shoes become embedded in the heels. Driving cogs into the heels of those without a support at the back of the shoe is a cause of corns. I have noticed after a long time of frost we have more cases of corns to deal with.

Treatment.—In corns, where no pus is formed, if we clean out all the stained horn and relieve the affected part from pressure, the horse will generally go sound in a short time. In more serious cases, where suppuration is evident, I think we are better to remove about an inch of the wall at the heel. That removes all pressure at once, and prevents pus finding its way out at the coronet. Keep the foot in a cold poultice until the lameness subsides, then dress the heel with some astringent dressing, and when wound is dry put on a bar shoe with a leather sole.

ON THE BENEFITS OF VETERINARY MEDICAL SOCIETIES.[1]

BY ADAM SIEVWRIGHT, ESQ., F.R.C.V.S., TARLAND.

GENTLEMEN,—It is a pleasure this morning to thank you for renewed confidence in me by re-electing me your president for the ensuing year. I assure you that no effort shall be wanting on my part to further the best interests of this Society, and I trust that when my term of office shall expire I may retire from my post with the consoling reflection that I have done everything possible to accomplish and promote its best interests.

We have a goodly number of subscribing members, and I invite you all

[1] Presidential Address delivered before the North of Scotland Veterinary Medical Society, January 17, 1900.

to assist me in securing new members in order to keep our Society in the position it is intended to occupy.

I think, gentlemen, that there are none of us but can say they have reaped some little benefit from our meetings. For myself, I think I have derived a good deal of benefit, and so must all country practitioners.

They have fewer opportunities of intercourse with their professional brethren than those in large towns, and thus are apt to get rusty, so to speak, running in the same groove year after year. Even though they do read all the veterinary periodicals, this does not keep them up to the mark as do our friendly meetings, interchanging ideas, giving the history of peculiar cases, and eliciting different views of such cases, and all with the same object of elucidating facts. As the aims of all associations are the promoting of good and friendly feeling among members, the elevation of the profession by the reading and discussion of subjects important to veterinary science and the general public, these aims shall, I assure you, not be lost sight of during my tenure of office, and any feeble stimulus I can afford shall be heartily to promote the welfare of the veterinary profession.

The progress made by veterinary medicine in this country within recent years must strike the most casual observer as very great.

Indeed, comparing the position and condition of its practitioners even thirty years ago with what these are to-day—and many of us are a great deal better off than we care to admit—we might almost be justified in asserting that the rate of advancement has been unparalleled in the history of professions.

Even within the last few years giant strides have been made not only in the field of discovery in medicine and surgery, but especially in the position of the profession.

The great influence of members of the Royal College of Veterinary Surgeons in local and general questions affecting the health of animals as well as that of the public, the recognition of their value to the community, and the necessity for encouraging them, having received legislative approval and confirmation, and the fact that their services are worthy of royal reward and universal distinction, all point to an advanced and advancing condition which less than a quarter of a century ago would have seemed impossible to the great majority of people.

I will claim your indulgence, gentlemen, for the brevity of my remarks, as the time at our disposal is short. Allow me to ask you to let us have well-attended meetings and plenty of topics for discussion. Above all, let these discussions be carried on with gentlemanly bearing, free from jealousy, remembering that we are all working together for the common good of our profession; so that at the year's end we may look back on our work with pride and pleasure, and feel that it has been accomplished with real honesty of purpose.

Reference to the business card shows that what is to follow is of more importance than these few disjointed remarks. I will detain you no longer, gentlemen, but express a wish that all will enjoy a most pleasant meeting.

VETERINARY EDUCATION.

ABRIDGED FROM A PAPER BY DR. SCHUTZ, PRIVY COUNCILLOR, PROFESSOR AT THE SCHOOL OF VETERINARY MEDICINE, BERLIN.

EVERY one knows how numerous are the obligations which are constantly facing the professor at a university, obligations towards the State which has entrusted him with the high mission of instructing "the youth of schools," and preparing them in a thoroughly efficient manner for their future career, obligations towards the young students themselves, and lastly, obligations towards his colleagues, who expect him to do his share towards the development and promotion of science. These remarks apply especially to a teacher of medicine.[1]

The mathematician, physicist, chemist, zoologist, and botanist can treat their branches as abstract sciences. The teacher of any of the branches of medicine, on the contrary, must in his instruction keep in view the practical and professional together with the scientific objects. This is what I wish to demonstrate in relation to some branches of the study of medicine.

Progressive practice in pathology is not possible without a thorough knowledge of anatomy and physiology—complete and well defined sciences which do not depend on the necessities of practical life, but reach beyond them.

The sphere of action of the anatomist and physiologist must extend in various directions. How will they try to accomplish the different tasks that are set them by science and practice? And how far will they initiate the student into anatomical and physiological science? I wish to define, as shortly as may be, my point of view in judging the position of the anatomist and physiologist, and indeed that of the teacher of any one of the branches of medicine, as well as to indicate the manner in which, in my opinion, they ought to fulful their functions.

The point of departure in anatomical instruction is descriptive anatomy (anthropotomy, zootomy). It shows us in detail how the body of a man or an animal is organised; it shows us the peculiar character and the correlative functions of the various parts and organs, which are exhibited by anatomical teaching in their nature and form, as well as their relation to surrounding parts.

Of all the branches relating to anatomical instruction, descriptive anatomy is for the study of medicine the most important. It is now so complete and distinct by itself that important discoveries in it are of very rare occurrence, except in the matter of neurology and anatomy of the nervous centres.

Notwithstanding, the anatomist finds in descriptive anatomy a field of immense extent, in which he may render great services by the special method of his teaching. The principle of this method is the union of oral and experimental teaching, and the combination of the lectures in the amphitheatre with practical work in the dissecting room.

[1] I use the word "medicine" in the sense given by Virchow. Between veterinary and human medicine there is scientifically no distinction, at least there ought to be none; the object is different, but the experiences that are to be drawn from the object are rules which form the basis of the doctrines. Hence the closer union of human and animal medicine which science has been endeavouring to bring about.

But to be able to observe with benefit to themselves, it is indispensable for all students of medicine that they should acquire a certain amount of skill, especially of manual dexterity, as the objects of experiment and study must first be prepared for observation, and this dexterity can be obtained only by repeated efforts and much perseverance. He who has acquired thorough knowledge as well as technical ability will be a master in diagnostics and in surgery.

The more detailed and practical instruction a student has received, the more practice he has had in the observation of nature and in technical work, the easier it will be for him to make good diagnoses, to recognise at once morbid lesions and to describe them methodically.

What is specially wanted in a professor is the power of making his teaching alive, insisting now on the function of any special organ in the living organism, now on the scientific problem related to the anatomical facts. Therefore, instruction must not be confined to auricular or ocular demonstrations, it must be scientific.

In this way we reach progressively the other branches lying within the province of the anatomist—comparative anatomy, histology, and morphology.

Comparative anatomy, histology, and morphology are not of direct utility to practitioners of either branch of medicine, but a thorough knowledge of them will enlarge their judgment regarding matters belonging to natural science in general, and thus sharpen it for the purposes of their profession. When descriptive anatomy in human medicine had reached the first turn of its history after the flourishing epoch of the sixteenth and seventeenth centuries, investigators remained no longer satisfied with the inspection of the human body, but began to dissect similar organisms, and, with a view to anthropology, made experiments in comparative anatomy, on organisms more and more different from man, until the entire creation of the organised world was subjected to comparative observation. It was at the beginning of the nineteenth century that comparative anatomy received that wonderful impulse, and gave rise to histology and morphology, which soon reached so high a degree of development.

Thus little by little the morphological direction of anatomy became more marked, finding its most distinguished exponents in the immortal Cuvier, and such men as Meckel, Johannes Müller, and Gurlt. In veterinary science, anatomy received from the first a comparative direction. From its agricultural value the horse was naturally the central object of the lectures and practical exercises in the dissecting room. But to the description of the horse, that of other domestic animals, often of very different construction, were soon added.

The result was that for the nomenclature of the various branches—osteology, syndesmology, angiology, splanchnology, adenology, &c.—the names of the corresponding organs in human anatomy were adopted. The same took place in histology and morphology, which from the beginning assumed a comparative character.

Anatomy ought to be taught as an independent science and not only in so far as it may be necessary to professional requirements, for whoever wants to get beyond the level of an empiric must remember that the firm base of his capability is an exact scientific knowledge of the object he treats. This must be insisted on the more resolutely as many students desire to obtain complete knowledge of anthropotomy and zootomy not

only as an auxiliary to their general instruction, but also as necessary intellectual luggage in order to enter their profession well provided.

The anatomist who wishes to understand exactly the construction of the human and animal body will never succeed by studying them apart. For this reason comparative anatomy, histology, and morphology must be united to descriptive anatomy as complementary branches.

Now, what constitutes comparative anatomy? It extends, like anatomy proper, to morphology, histology, and ontogeny. Considered from the double point of view of phytotomy and zootomy, innumerable organisms are found to have great analogies in their construction. Comparative anatomy shows that man and all animals, as well as all vegetables, are made according to the same fundamental principle, being composed of similar organs; we find this principle still better marked if we observe first the different forms and then one variety or class of animals, or again if we specialise the researches of one system on organs or a single organ, or in trying to isolate the typical from the special form.

Histology received its scientific basis in 1839 by the foundation of the cellular theory of Schleiden and Schwann, which was only arrived at by the histological comparison of zoological and phytological organisms. The histology and the morphology of plants and of animals always go together; and if the comparative character is taken from histology, there remains but a meaningless description.

Ontogeny is intimately related to comparative anatomy, and only differs from it in concerning itself not only with perfectly developed organisms, but with the successive developments of a single cell, which passes through a series of transformations and metamorphoses, each of which resembles the normal state of an inferior organism.

The anatomist must give medical students the opportunity of obtaining the knowledge of the construction of human and animal forms, and, by ontogeny and comparative anatomy, arriving at a scientific comprehension of them. He will thus place them in the position necessary to undertake physiological, and, later, pathological studies. In this manner anatomical instruction will attract all those who, as future teachers and promoters of natural science, desire to obtain an insight into the laws of construction of the human and animal body. It is nearly fifty years since Virchow began by his magnificent labours to shake off the chains that bound the wing of medicine. At the same time appeared the commentaries of Schleiden upon the elementary formation of phytotomical tissues and of Schwann on that of zootomical tissues.

It would be presumptuous to affirm that all Virchow has said to establish the pathological cell theory is beyond cavil. But, the final object of pathological cellular research being the localisation of disease, it is from that point that it has exercised its greatest influences upon the general march of modern medicine.

Pathologists will therefore do well to direct their investigations to the anatomical basis of disease. Only one must have a clear idea of the method of carrying on investigations. All scientific observation must be regulated according to a fundamental anatomical basis, whether it be executed on a diseased individual, man or animal, or upon a dead body. Every perceptible lesion occurring in a definite part of the body can be localised upon definite centres.

If pathology has won its freedom as a complete and independent

natural science, it owes it specially to pathological anatomy and pathological physiology. It is therefore indispensable that pathologists should maintain their independence and leave no loophole which might give entrance to foreign sciences and degrade their teaching to the rank of a secondary accessory science.

In order to preserve the indispensable independence of their science, pathologists must continue to make their own experiments on animals by the aid of the experimental method, so as to fix the causes and establish the course of the diseases by producing them artificially in animals. As soon as man or the animal of a high order has passed beyond the first stages of oval life we do not see the manifestations of movement limited only to consecutive formations and re-formations of cells, but from the cells have arisen tissues, organs, and organic systems, with determined objects and complicated movements. If the pathologist speaks of disease, he includes in it those manifestations of changes which he may perceive in diseased tissues, organs, or organic systems. This is the point of contact between man, animal, and plant.

Wherever the pathologist watches these manifestations of movement, he notices that they depend on definite and immutable chemico-physical—*i.e.*, mechanical—conditions, as all other manifestations of nature do. It is thus that the pathologist has been for a long time past pursuing comparative pathology. The zootomist-pathologist has gone further in that direction than his anthropotomist colleague; but the latter has become satisfied that not all diseases exist in man, and also that pathological processes depend on peculiarities of the species, and that perfect comprehension of the affections of the separate organs of man is only gained by comparison with the affections in the corresponding organs of animals.

Anatomy, physiology, and pathology, the three great branches of medicine, are comparative sciences. It was a great mistake of the old schools of veterinary medicine not to have understood the value of such a scientific system, to have narrowed too early the students' circle of interest, and instead of giving it a more extensive development, to have restricted instruction to studies which had only the material side of life in view.

I have conversed much with veterinary surgeons more or less advanced in life, all of whom expressed their regret at not having acquired at the proper time a large amount of general scientific information. I have often heard it said that the professional knowledge of a physician or a veterinary surgeon without general scientific education was insufficient. Comparison is absolutely necessary for the comprehension of medicine, whether in man or animal, healthy or diseased.

I now come to the question of the organisation of Institutes for the study of epizootic diseases.

Anatomy, physiology, and pathology in veterinary colleges are branches of immediate utility in relation to diseases of animals studied by veterinary surgeons; they therefore must be considered as essential and independent branches.

Virchow for fifty years fought for the emancipation of pathology, and during that time he never stopped urging anthropotomists and zootomists alike not only to think but also to work physiologically. Thanks to him, pathology, being separated from its primitive source physiology, was able to continue to develop as an independent natural science. It was then that the changes which diseases produce in the body were observed, and that

with successive experiments attempts were made to explain how the observed changes came about. Immense progress in the knowledge of the development and treatment of diseases was thus made and scientific therapeutics was created.

Meanwhile pathological anatomy, which was formerly considered as one of the subdivisions of clinical teaching, was slowly and painfully making its way to the position due to it.

But it was not admitted into zootechnical institutions till 1870, when the first Chair of pathological anatomy in the veterinary college of Berlin was created; an example which was soon followed by the other veterinary colleges of Germany. Pathological anatomy became a distinct part of the curriculum of veterinary instruction; and this innovation constitutes the most noticeable progress veterinary medicine ever made. It was the beginning of a new era for therapeutics, which can only work with any certainty if based on experimentation. Therapeutics leaving empiric methods rose to the rank of a science by means of pathological physiology.

Pathological physiology, pathological anatomy, materia medica, are the three great pathological branches taught at veterinary colleges. But for the proper teaching of the fourth branch of pathology, *hygiene*, which includes instruction in the causes of diseases and the means of avoiding them, the institute and the necessary material were formerly wanting. The ravages caused by cholera demanded hygienic measures to prevent the introduction and spread of the scourge. Having started from England, the movement reached Germany, where Pettenkofer proved by his experiments on cholera that there are diseases that can be avoided. He demonstrated the external conditions of the development of contagious diseases. Besides, the progress made in natural sciences rendered it possible to consider from a hygienic point of view such questions as heating, ventilation, underground water, emanations from the ground, food, &c. Later, the new experimental methods indicated by the ingenious discoveries of Pasteur and Koch, opened new fields of work, and pointed out the possibility of preventing the outbreak of contagious diseases, by allowing hygienists to resort to clinical, physical, anatomical, and bacteriological methods. The creation of Institutes of Hygiene, according to the German model, is now planned everywhere. All higher veterinary colleges of Germany will soon have such Institutes. From the experiments on the causes of disease in man and of animals, it follows that we may expect from hygiene much information as to the etiology of disease. Such ought to be the object of the teaching of hygiene, and to insure the scientific progress of this science hygienic institutions are indispensable.

Of all the branches of medicine, hygiene is the one which stands closest to pathology on the etiological side. General pathology looks for the effects that external causes produce in man and animals; it observes the passages by which these causes have entered and spread in the body.

Hygiene, on the contrary, is interested in the origin of causes outside of the human or animal organism, and in the conditions in which these causes persist and multiply in natural and artificial media.

It will easily be understood that it is no more possible to draw an exact line of demarcation between general pathology and hygiene, than between medicine and surgery. Because in the same way that, starting from effect, pathology must often look back to external causes, hygiene must often go back from these causes to their effects on organisms.

The subject of pathology belongs to four professors. Two of them observe the seat and nature of the disease, one with pathological physiology (medical and surgical clinician), the other with pathological anatomy (pathological anatomist); the third professor inquires into the therapeutic processes based upon materia medica (pharmacologist); finally, the fourth prevents the appearance of diseases (hygienist). In human medicine these four great branches are again divided; thus we have the diseases of special organs (eyes, ears, larynx, &c.) treated by specialists in special cliniques. Something similar exists in veterinary medicine,—for example, horse-shoeing, which properly belongs to hygiene, but on account of its importance requires the attention of a specialist. But the necessity of specialisation does not exist with regard to other subdivisions of veterinary medicine, because sporadic diseases are of much less importance in domestic animals than in man. Pathology cannot be taught in a superior veterinary college, if the professor is obliged to restrict himself in his teachings to sporadic diseases; for those diseases as well as the infectious ones, furnish to the various pathalogical, anatomical, and hygienic branches the material for instruction, without which the progressive work insuring complete veterinary instruction is impossible.

In every institute, in every veterinary clinique, opportunities ought to be given to students as often as possible to acquaint themselves with the diseases of animals from the comparative as well as other points of view. In this way the foundations are best laid for a successful study of processes. It is not only in the interest of instruction, but also of the advancement of the knowledge of epizootic diseases, that in veterinary colleges epizootic and sporadic diseases be not separated.

Eminent specialists must be placed at the head of the etiological, pathologico-anatomical, and physiological departments.

Thus organised, those veterinary institutes will draw to them all those who as intending professors or pathological experimentalists will feel the necessity of being thoroughly initiated into the etiology and processes of diseases.

One of the differences between sporadic and epizootic diseases consists in the different modes of their treatment. The State has ordered special measures for fighting and eradicating epizootics; the execution of these measures and their supervision belong to the official veterinary police, composed principally of veterinarians. It is therefore of the greatest importance that students of veterinary colleges should be instructed on the measures ordered by law against epizootics. For it is natural that men, to whom the State may one day entrust the care of the public interest, should be well prepared for their work. Epizootics result from causes which require scientific study, and the teaching of veterinary police at veterinary colleges must include the anatomy, physiology, and etiology of those epizootics. A special object of this instruction should be the differential diagnosis between these epizootics and other diseases having a similar appearance.

Instruction in veterinary police has its best interpreter in the person of the chief of the veterinary hospital. Especially if he has an official position, he will on many occasions have to organise legal measures against epizootics, see to their being carried out, and judge of their opportuneness. All these matters are of the greatest importance in his teaching, and he will be all the more competent, because, his office giving him opportunities for

a high appreciation of practical agronomic conditions, he will be so much better able to adopt legal measures of extinction when required. Therefore his students can never take too much notice of the regulations he may prescribe, and of the results of such measures.

While in the lectures and demonstrations on meat and milk inspection stress is laid only on those qualities of meat and milk that affect the health of man or animals, pathological anatony is not so restricted, but teaches at the same time all other lesions of fat, muscles, tissues, &c. that have been observed in animals up to the present. This instruction will enlarge the sphere of activity of the student and enable him to obtain the necessary knowledge for service in abattoirs.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

Meat Inspection and Meat Inspectors.

BY W. R. HUNTING, F.R.C.V.S.

(*Discussion continued from p.* 83).

Mr. William Hunting, in reply, said the thing which struck him was that all the members seemed to take a very fair view of the question, and he was hardly prepared for that. He was inclined to think that, following the example of some of the provincial veterinary medical associations, there would have been even stronger expressions of disapproval than he had heard that evening. Mr. Simpson had pointed out that the Sanitary Institute did not confine their examinations to meat only, but included other foods. The explanation was very simple. At the present time the sanitary inspector inspected all foods, meats, and such-like things. The Sanitary Institute wished to improve that inspection, and they had therefore given an additional certificate in the meat inspector's certificate, and by way of making food inspection more prominent they had combined the inspection of other foods with the inspection of meat. It seemed to him that practically it was a convenient arrangement on their part. The Sanitary Institute had never expected that veterinary surgeons would go up for the examination. The Institute looked upon their examination and certificates as quite inferior things to the veterinary examination and the veterinary certificate, and would have no objection to examining a medical officer or a veterinary surgeon, but it never entered their heads that either a medical officer or a veterinary surgeon would apply for that examination. If, however, it was put to the Institute that there were business reasons—reasons that would render it advisable and expedient for a veterinary surgeon to hold the certificate, he had very little doubt that the Institute would put an exception in, so that veterinary surgeons on the production of their diploma or certificate of registration would be allowed to go for the examination at once. Then Mr. Simpson had said the main question was whether members of the R.C.V.S. only should inspect. If veterinary surgeons could persuade the British public so, certainly. All the appointments that a veterinary surgeon could fulfil, if they were lucrative, let him have. He did not blame the profession for trying to get them all, but the attempt should be made with a little common sense and a little judiciousness. It was not necessary to make

out that veterinary surgeons were the only recipients of all wisdom, because that might set people's backs up. Local authorities, according to Mr. Simpson, would continue to employ the combined sanitary and meat inspector, but that was what they did now; that was the point that was apparently missed. It was not what they would employ, but what they did now. The person who was going into the question as a superior individual was the veterinary surgeon. He acknowledged his superiority, but it was necessary to wait until the laws were altered, and the best thing to be done was to help to alter the law. At the present time the Public Health Acts of the whole country were in a chaotic state, but since the Scotch Act had passed it was pretty well known what was being done. In this country the Public Health Acts overlapped each other in a most dreadful manner, and required a lawyer to explain them. It would not be long, he thought, before there was an amended Public Health Act, and that would be the time for veterinary surgeons to look after their interests. With regard to Mr. Upton's remarks that if men were coming in taking the place of veterinary surgeons it was right to object. So it was, but the boot was on the other leg; it was veterinary surgeons who were trying to take other men's places. Surely veterinary surgeons could not complain at the men being improved from a public point of view. Those men were in possession, and were legally recognised; veterinary surgeons were not. Mr. Barrett said that he (Mr. Hunting) was guilty of an illogical utterance because he said in one part of his paper that the veterinary surgeon was the only man who was a perfect meat inspector, and shortly afterwards tried to prove that other men were good enough for the job. He saw nothing inconsistent in that. If veterinary surgeons could be appointed for all meat inspection, by all means let that be done; but it could not be done. There were many objections, and it was therefore necessary to make the best of the men who were in. Looking at it simply as a consumer of meat, he recognised that the man who inspected meat to-day was the inspector of nuisances, and he recognised that in 99 cases out of 100 the inspector knew nothing about it, that he sometimes passed bad meat, and just as often seized good meat, and was altogether unfit for his job. The Sanitary Institute, following the suggestion of the Royal Commission, were endeavouring to improve that man. Under the present circumstances a meat inspector recognising any change in colour, consistency, or any morbid change in meat, went to the medical officer of health. What he wished was that he should go to a veterinary surgeon, who would know a good deal better than the medical officer of health. Mr. Barrett could not understand why the Sanitary Institute barred the veterinary surgeon. The Sanitary Institute did not bar the veterinary surgeon. The Institute provided for the existing officers. They never dreamt that the veterinary surgeon would go for the examination. He admitted that the veterinary surgeon was the best person to inspect meat, and Professor Macqueen believed that when the community recognised the importance of meat inspection properly, they would see that it would pay them to appoint veterinary surgeons. He hoped they would, but that time had not arrived. When they offered salaries of £300 a year there were plenty of veterinary surgeons ready for the job, but so long as they offered £75 to £100, he did not think there were many veterinary surgeons who would accept the position. Professor Macqueen's remark that he had printed only the part of the paper about which there was no disagreement was

rather too bad. He thought it was rather good of him to have printed any of the paper at all. With regard to Professor Macqueen's remarks that objection should be taken to certificates which might compete with the veterinary diploma, that was a very important question. It was a matter of opinion. His (Mr. Hunting's) view was that they really could not be mistaken for each other. One might presume that the local authority which mistook a meat inspector's certificate for a veterinary diploma was an unintelligent body that was not often to be found. That that was more likely to be a correct anticipation than the Professor's was shown by the appointments that had been made recently. In nearly every one of those cases where Corporations such as Bolton, Blackburn, and similar places had advertised for a meat inspector, a veterinary surgeon has been appointed. The Professor had referred to the wisdom of serving two masters, and rather doubted whether he (Mr. Hunting), as a veterinary surgeon, ought to have had anything to do with the manufacture of the certificate or with the examination. There was a good deal to be said on that point. He himself hesitated whether he should take the place, and hesitated still more when he was told by the chairman at the first meeting he attended that another veterinary surgeon had been there before him and had declined to act any longer with them. He then said that he must have that veterinary surgeon's reason before he acted, and the chairman told him that the reasons were that the veterinary surgeon believed it might be injurious to the veterinary profession, and that the certificate might cut out veterinary surgeons from holding the position which they otherwise would get, and so on. He argued that question out himself, and, for the reason that he did not believe the examination would have any such effect, he remained at the Institute. The reason he remained there was this: it struck him that the veterinary profession now saw the folly of having held aloof from all public health work—they had missed their opportunity. Was it worth while to continue to hold aloof? Or was not it as well for a veterinary surgeon to join with the medical men and sanitarians in every move they made, unless it was very clearly detrimental to the veterinary profession? He believed that it was an advantage to the profession that there should be a veterinary surgeon on the committee and that it would not do harm. Somebody had compared the meat inspector's certificate and the Royal College of Veterinary Surgeons' diploma. He objected to do anything of the sort; they were not comparable at all. "An earthquake and a china orange," or any other absurd simile, was no more wide apart than the two things. He had been asked what was the motive of the paper? It seemed to him that from the remarks made by the Lancashire Veterinary Society and by the Council of the R.C.V.S. that some of the members of the veterinary profession were prepared to run riot, to act in a sort of dog in the manger spirit, and to give the British public the idea that they were so elated with their own knowledge, and so blind to the interest of everybody else, that they stood a very good chance of making fools of themselves in the eyes of the public. He wrote the paper really to see what the members had to say, to submit the other side of the question, and to ask whether it was well for veterinary surgeons to rush at a wall—to try and upset something which was established by the legislation of the country at the present time. Most distinctly they were going the wrong way to work. Mr. Stainton had given his experience of the teaching at the Sanitary Institute; that was only a little additional teaching

that had been offered. It should be remembered that it was not teaching which obtained the certificate, but examination. Candidates had to pass the examination, and it mattered not how they obtained their knowledge. One thing they had to do was to have three months' practical experience before they came there. Nearly all of the present candidates had over twelve months and many of them years of practical experience. With reference to Mr. Stainton's description of what took place, and the very prominent appearance of three medical men, he held again that he did the right thing by accepting the offer to give two of the lectures and not to leave lectures distinctly in connection with animals to be given by medical men. Mr. Porch objected to the idea of waiting until abattoirs were established all over the place, for to do that would be to lose the chance and to step in too late. Of course it would. The object was to show the public, as he hoped they were showing them, that veterinary surgeons were not only fitted, but the most fitted for the appointment, and wherever such appointments occurred they should apply for them. So far the local authorities had recognised their right to the place. To step in at once for a good appointment did not mean the opposing of the little sanitary inspector's certificate given with the idea of improving the existing man. Mr. Porch used the expression that the Sanitary Institute had apparently endeavoured to keep out the veterinary surgeon. They had practically done so. They had provided simply for the legally recognised meat inspector. They were not satisfied with existing inspectors, and they made a special class for meat inspectors, to whom they offered a certificate. The examination required that the candidate should be a sanitary inspector simply because that was the Institute's own duty and those were the men who did the work. There was no Public Health Act which enabled a veterinary surgeon to seize meat; what he had to do was to employ one of the men under him who had got the sanitary inspector's certificate to seize. He thought that the resolutions of the Seventh International Congress of Veterinary Surgeons were about as far as most people would go on the subject of meat inspection, and they recognised lay inspectors.

Clinical Papers.

MULTIPLE DISSEMINATED NECROSIS OF LIVER (WITH BACTERIAL INVASION OF THE CHEST CAVITY).

BY JAMES M'PHAIL, ESQ., M.R.C.V.S., INSPECTOR OF MARKETS, EDINBURGH.

THE following case is worthy of note on account of the curious secondary lesions in the chest cavity.

History.—The principal of a firm of butchers in the town told me that he intended to send a bullock in to the abattoirs, as it had not been doing at all well, and he thought it was tuberculous.

The animal on its arrival turned out to be a two-year-old shorthorn bullock, though it was so small as to resemble a year-old stirk, the emaciation being so great the skin was dry and hidebound, the abdomen tucked up, and the nose dry; the brute, moreover, was very "stilty" in its gait. On examination I told the owner that there was not much chance of its

being any use for beef, but I did not think that it was a tuberculous subject, but rather that some foreign body had passed from the stomach into the chest.

When the animal had been slaughtered the general emaciation of the carcase necessitated the condemnation of it for food purposes. The liver was extensively diseased, and attracted attention immediately the carcase was opened. The organ was greatly enlarged, and scattered all over its surface were roundish nodules, which slightly projected beyond the general level of the capsule. Sections through the liver showed that these nodules were scattered throughout the whole hepatic tissue; they varied in size from the area of a sixpence to that of a half-crown, and were of a tough cheesy consistence. The nodules were sharply differentiated from the liver substance.

I made several cover-glass preparations from the centre of these caseous-looking nodules, and endeavoured to stain them with several stains, but without success as far as bacteria were concerned. However, scrapings from the periphery of the nodules, close to the healthy liver cells, gave evidence of bacterial presence, cover-glass preparations stained with Loeffler's blue showed rod forms, mixed with wavy filaments in masses and bundles.

Sections of the nodules, which were easily cut by a Cathcart microtome, were mounted, and though the cheesy substance of the nodule would not stain, the surrounding portions of the liver took on the stain, and, under oil immersion, also showed the bacteria, the wavy forms being more in evidence than the rods.

On the anterior aspect of the liver, next to the diaphragm, there was a strip of a greyish yellow formation involving the capsule of the liver, and seeming to join several of the nodules together. It was about two inches wide and five inches long, and in this part the wavy bacteria were very prevalent.

On the chest being opened a curious condition was observed. On both pleuræ were small discrete, caseous, ulcer-like lesions. They were also present on the visceral pleura, and in addition were scattered over the pericardium. The pleuræ and the pericardium at the affected points were thickened; the ulcer-like bodies were button-shaped and fairly regular in size,—their shape, indeed, reminded one of the ulcers in the intestines in a case of swine fever; but the most curious fact was that wavy bacillary forms were obtainable in cover-glass preparations of scrapings from them, and these did not differ microscopically from those present in the liver lesions; at any rate, as far as we were able to judge, they were morphologically the same.

In the tissue of the lung there were no lesions discoverable, they being wholly confined to the parietal and visceral pleuræ, and to the pericardium. The only pathological explanation of the case I can advance is, that this was a case of bacterial necrosis of the liver of rather long standing, in which there seems to have been some coalescing of the nodules, and with them of their bacillary surroundings on the anterior surface of the liver. Then the bacteria found their way through the diaphragm by the lymphatic stream, and probably, being in bundles, had caused various embolic centres, and these had given rise to the peculiar necrotic caseous-looking ulcers, if one may so call them.

I did not go the length of cultivating the bacteria obtainable in this

case, as there are difficulties in the way of verifying experiments. There is no doubt that the extensive disease of the liver was the cause of the beast not thriving and the resulting emaciated condition.

The pleuræ were stripped off the ribs, and, along with the liver and pericardium, are preserved in our sanitorium at the abattoirs. We were induced to preserve the specimens, as this condition in the chest cavity has not been seen before by any of the inspectors, although the hepatic lesions are fairly common.

GANGRENOUS DERMATITIS.

BY W. R. DAVIS, ESQ., M.R.C.V.S., SWANSEA.

DURING the winter of 1895-96 we had, in the practice connected with the New Veterinary College, Edinburgh, a number of cases among cart horses, in which, accompanied by severe lameness, a piece of the skin of the coronet or pastern would be found to be excessively painful, and would, after a few days, slough out and leave a big granulating wound. I described a series of these cases in the *Veterinary Journal* at that time, and referred to it as gangrenous dermatitis. It is seen only in winter, and is due to intense cold. Salt put on snow on tram-lines or on the streets gives a mixture that frequently determines the condition. Lately I have had quite a number of cases among colliery horses, and in one case death occurred. A description of this case will serve for the others, though in them the process was far less severe. At the colliery in question the horses are stabled above ground in a wretched tin-covered shanty, and are allowed very poor bedding. The stable is always cold and damp. The horses work nearly knee deep in mud, which seems to be of a very irritating nature, because all the new horses get a particularly persistent form of mud fever; the skin, up as far as the knees and hocks, being swollen and tense, and covered by little vesicles, giving one at first the idea that the animal had been recently blistered. After a time the skin appears to adapt itself to the new conditions; at any rate, one seldom sees the legs of the horses which have been working for some time in the colliery affected. Often, however, in the recently purchased horses after the mud fever has been practically cured, cracks are found on the skin over the back tendons and in the heels. On Wednesday, October 11, 1899, I examined two horses and two mares as to soundness at the colliery in question, and recommended their being purchased. The two horses were sent to a pit some distance off, and the two mares were kept to work here. A fortnight afterwards I was asked to examine them, as they were both badly affected with mud fever and were too lame to work. One of them, a light bay mare, rapidly recovered after treatment with liq. plumbi and oil, but the other, a dark brown, resisted treatment for three weeks. She was by this time free from lameness, but had still cracks in the heels. In spite of my recommendation still to keep her in the stable, she was put to work, as the demand for coal was great and the colliery was underhorsed. On visiting the place a week afterwards, I found this mare dreadfully lame in the off hind limb. The coronet on the inside was swollen, excessively painful, and a reddish serosity oozed from the surface. The skin all round the pastern was swollen, and just above the coronet on the inside half-a-dozen big vesicles, and a number of smaller ones were felt. I had the shoe removed and examined the foot, but found nothing. I ordered the foot

to be poulticed for a couple of days and then treated with antiseptics, but in spite of all, the mare succumbed in three days. In the course of these three days the inflammation was of a most violent nature, and was not limited to the skin itself, but affected the deeper structures, also subcutaneous and podophyllous tissues and tendon sheaths. On the surface of the skin numerous bullæ developed, which burst and discharged a fœtid red material containing pieces of necrotic skin and subcutaneous tissue. Before death occurred it looked as though the whole of the skin of the pastern and the subcoronary tissues were infiltrated and raised up by a bloody purulent exudate, and were being eliminated. Along the course of the flexor tendons the skin was also infiltrated, and was ulcerated in several places.

As to the etiology of this gangrenous inflammation of the skin, there is an evident connection between very low temperatures and the occurrence of the accident. The brown mare above referred to, like the other horses, had the hose-pipe turned on to her legs every night on her return to the stable, and was then allowed to stand in a stall opposite the stable door with a cold wind blowing on her legs. Whether the low temperature thus produced is sufficient of itself to induce the changes in the skin, or whether it merely gives the opportunity to the ever present bacillus of necrosis to attack the now almost anæmic and devitalised skin, is difficult to say. The intensity of the inflammatory process, the rapidity with which the changes were produced, seemed to suggest something more than merely physical causes. The general symptoms manifested by the patient, too, indicated intoxication. These were inappetence, rapid and feeble pulse, shivering, high temperature, great depression, and weakness.

The light bay mare purchased at the same time as the subject of the above note has also been affected since. In her case a piece of skin of the coronet as large as a crown piece sloughed out, bullæ appeared on the skin over the flexor tendons, accompanied by considerable infiltration of skin and subcutis. This has yielded to treatment by white lotion and carbolic acid. Altogether, I have had five cases at this colliery, and have two at another under treatment at present. It is useless to condemn the practice of washing the legs. The answer invariably is, cold water can't be much worse than cold slush. As a preventive measure, I find that it is useful to be careful with horses that have greasy or cracked heels. Dusting a dessicant powder on the parts after they have been washed, and keeping a pad of cotton wool and some of the powder kept in position with a light bandage, and worn during work and at night, is a good practice. I have suggested the discontinuance of the nightly washings, and the substitution of scraping off the mud and rubbing the legs with sawdust or peat moss, but find it difficult to get the instructions, which, of course, entail a good deal more trouble, carried out.

ACUTE RHEUMATIC FEVER IN A COW—HEART CONSIDERABLY INVOLVED.

BY J. CONNOCHIE, ESQ., M.R.C.V.S., AYTON.

Subject.—A shorthorn cow, five years old.

History.—This animal was left for the night on December 25th, seemingly in perfect health. Next morning she was found lying, wet with

perspiration, in a slightly awkward position, and on being raised up was noticed to be excessively lame in the near hind limb A careful examination revealed neither fracture nor swelling of any part, so she was put into a loose box, littered with chaff, and left quiet. As there was not much constitutional disturbance, and the cow fed fairly well, it was thought that she might have slipped on the cement floor when rising and so have injured herself. In two days there was a fair amount of improvement in her walk, but she seemed disinclined to move at all. In two more days the extreme lameness had entirely disappeared, but there was marked stiffness, and the off hind leg seemed quite as bad as the other. She also became very feverish—temperature 107, respirations hurried, pulse quick and small, appetite in abeyance, and a tendency to diarrhœa. During the next three or four days there was no improvement in the symptoms, but rather the reverse, for the fore limbs were becoming involved as well, and she inclined to the recumbent position, and rose with difficulty. As time wore on she seemed to suffer acutely, and when standing shifted off one foot on to the other incessantly. In the hind limbs a slight swelling appeared on each tendo Achilles, and in the fore limbs on the tendon of each extensor metacarpi magnus. Towards the end of a fortnight after the seizure it became evident that she could not last much longer, as the lungs had become so much congested and the diarrhœa still continued. All the nourishment she would take had to be some sort of liquid, thin gruel or malt. She became greatly emaciated, and to see her attempt to stand was painful, so much so in fact that we anticipated her end.

Post-mortem.—On cutting into the swellings over the tendons, a small amount of semi-coagulated lymph escaped, and there was inflammation of the synovial lining and distension of the sheaths. The next important lesion was found in the posterior vena cava, just where it passes through the liver. Here was a large ante-mortem clot, at least that is what I took it to be, but it seemed to have undergone some sort of degeneration, for it was quite cheesy. It appeared to almost obliterate the vein, and to extend right into the right auricle. On dissecting the heart itself, I found all the valves more or less coated with the same cheesy material, the auriculo-ventricular openings, especially the right one, nearly occluded, and the walls of the right ventricle thickened to the extent of over two inches with it. It was so deeply imbedded into the walls that it looked as if it replaced to some extent the muscular fibres themselves. During life there was no irregularity of the heart's action, no jugular pulse, nor anything to show that the heart was so much involved.

RUPTURE OF THE DIAPHRAGM.

BY FRANK B. PEARSON, ESQ., M.R.C.V.S., CHESTERFIELD

TRUE ante-mortem rupture of the diaphragm is not by any means a common occurrence; for this reason, as well as because the case presents some special features of interest, I desire to place the following on record.

At 6.30 P.M., one evening lately, I received a telephonic message to the effect that I was wanted at once by a client who had "a horse nearly mad with pain." On my arrival I found a man walking a six year-old cart gelding up and down a yard. The horse was bathed in a cold perspiration,

and in walking swayed from side to side. Dyspnœa was very marked; inspiration was performed by a double act; expiration was single. The pulse was quick and weak, and obviously of the kind characterised as "running-down." The eyes were staring and almost insensitive to light; later they became perfectly insensitive. There was no scraping with the feet, but at first the patient evinced a strong desire to lie down; this, however, passed off in about an hour from the time I first saw him. Movement forward was comparatively easy, but "backing" was almost out of the question. There was no marked tympany of the abdomen until shortly before death, which took place at 9.15 P.M.

The *history* of the case prior to my appearance upon the scene was as follows:—The horse had been on the pillar-reins for a few days, owing to a small wound on the head, and had not had his usual amount of food, which ordinarily consisted of bran and hay. At 4.45 P.M. he was left feeding, and apparently quite well; at 6 P.M. he was discovered in the condition I have described above.

Treatment was of little avail. I gave him hypodermic injections of morphia with the idea of alleviating his sufferings, but the result was very slight.

Post-mortem examination revealed a large rent in the muscular part of the diaphragm above the phrenic centre, and a small tear an inch to the left of the foramen dextrum. The edges of the tear showed a certain amount of congestion and exudation. Some of the small intestine was protruded into the thoracic cavity. With the exception of a slight injection of the great colon, the intestines presented nothing noteworthy. The lungs were congested, but all the other organs were healthy.

I am aware that rupture of the diaphragm, as generally described, is a post-mortem lesion, but in this case I am of opinion that the damage took place prior to death; and for the following reasons:—The extreme distress in respiration, and the double character of inspiration, not accounted for by any other pathological condition. The congestion of the edges of the torn diaphragm, and the fact that the post-mortem examination was made before the abdomen became distended with the products of fermentation.

MALIGNANT ENDOCARDITIS IN THE HORSE.

BY WM. LOTHIAN, ESQ., M.R.C.V.S., DUNS.

CASES of malignant, ulcerative, or infectious endocarditis are not altogether unknown in veterinary practice, but are sufficiently uncommon to demand careful attention when they do occur.

The case described in the following short note offers some points of interest, sufficient at any rate to justify its being recorded.

On the 29th of November last I was requested to see a four-year-old Clydesdale gelding which was slightly lame on the right fore limb. The lameness was so slight as to be entirely unnoticeable so long as the animal was walking, and from the objective symptoms I came to the conclusion that it was a case of slight sprain of the structure below and behind the knee. Treatment suitable to such a condition was adopted, and the case was not seen again until December 23d. The lameness was now much more pronounced, and considerable pain was evinced in flexing the knee. A small

blister was applied on each side of the flexor tendons behind the joint, and as I suspected that there might be a rheumatic element in the case, salicylate of soda and nitrate of potash were administered. The appetite at this time was much impaired.

On January 1st of this year considerable œdema had appeared along the abdomen, and in connection with the sheath. The animal died on January 3d.

On post-mortem examination a moderate quantity of fluid was found in the peritoneal and pericardial cavities. The chief lesions, however, were found in the heart and lungs.

The right auriculo-ventricular valve was entirely replaced by a large mass of very irregular blood-stained vegetations. The other valves were practically normal. The left lung contained a number of abscesses, varying in size from the size of a pea to that of a bean. The flexor tendons and their sheaths in connection with the right knee were much disorganised.

The case appears to me to have been one of malignant endocarditis with embolic formation, and is especially interesting from the fact that the *right* auriculo-ventricular valve was affected.

Notes.

SANITARY INSPECTORS' EXAMINATION BOARD.

The attention of the public and the authorities concerned is, I learn, to be directed to the attitude of the Local Government Board with regard to the Sanitary Inspectors' Examination Board. The Board is a self-constituted body, existing for the purpose of granting certificates of competency for the office of sanitary inspector or inspector of nuisances. It is also among the objects of the Board to prescribe such courses of study and technical training as may be calculated to ensure the fitness of persons desirous of qualifying for the public offices mentioned, and to make and maintain a register of those to whom certificates are granted. This body appears to be recognised by the Local Government Board, and no doubt its certificate will soon be an indispensable if not compulsory qualification for the office of inspector. But although the matter is one which closely concerns local authorities, and also those promoting technical education, the Local Government Board has declined to exercise its right to add representatives of these interests to the examining body. In these circumstances it is not surprising that at the recent meeting of organising secretaries for technical education the examinations were condemned as "unworthy of public confidence," and the attitude of the Local Government Board regarded as incomprehensible.—*Daily Press.*

THE PREVENTION OF TUBERCULOSIS.

As showing how the general public is awakening to the seriousness of tuberculosis, it is noteworthy that at the Hawick Congress of the Sanitary Association of Scotland, held on the 7th September 1899, three papers were read on the subject of the prevention of this scourge. Although none of the papers contains anything entirely new, yet there are one or two paragraphs of special interest to veterinarians. Dr. Leslie Mackenzie, in

speaking of the spread of tuberculosis, said "that what applies to the human being applies to the cow, and the cow is the wet-nurse of the human infant. The inspection of dairies goes far, and it will go farther; but to look for the extirpation of tubercle in cows by the inspection of byres alone is as reasonable as to look for the extirpation of smallpox by laying a new pavement. So long as tubercular animals are permitted to disseminate their diseased milk among the most tender and susceptible members of the community, not all the dairy inspection in the world will make much impression. The management of animals must become a much closer affair than it now is if tuberculosis is to be treated radically. And here is a problem for discussion: Given that the tuberculin test is a reliable diagnostic in at least 90 per cent. of cases, how may it best be brought into general use? Already large institutions, like asylums and hospitals, are making milk contracts conditional on the tuberculin test. The veterinarians among us will indicate how best we can make this condition general."

Dr. Erskine, also speaking of the dissemination of the disease by means of milk, is of opinion that the milk trade in towns is under much more satisfactory regulation than that in the country. He is also of opinion that "the compulsory use of tuberculin will be found necessary in course of time, in spite of the attitude of opposition still maintained by the Board of Agriculture and others interested. The test is now ascertained to be practically infallible. Local authorities should agitate in favour of its adoption, being the only means of diagnosis for ascertaining and separating tuberculous from healthy animals. The reacting animals should be slaughtered and used, as far as possible, as human food, no compensation being offered, except in the case of the animal being found unaffected with tuberculosis on being killed.

"The presence of tuberculosis is much more frequently observed in the carcases of dairy cows than in those of any other animals slaughtered, the former having been kept in cowhouses where the sanitary conditions are often very unsatisfactory. The inspection of meat does not appear to be satisfactory, especially of imported meat, whether landed as carcases or slaughtered at the port of landing.

"The meat inspectors should be veterinary surgeons, with qualified and specially trained lay assistants. Owing to the fact that a considerable portion of a tuberculous carcase may be used for human food, inspection of meat should only be entrusted to specially qualified and trained inspectors."

The papers are given *in extenso* in the January number of the *Sanitary Journal.*

DOUBLE MONSTERS.

The occurrence of double monsters of almost every degree is not by any means rare among domestic animals; therefore anything which will throw light upon an obscure and complex subject is to be warmly welcomed by any one who feels any interest in teratology and teratogeny.

The proceedings of the Royal Society of Edinburgh, session 1898-99, contains a very interesting account by Dr. T. H. Bryce of a case of *Duplicatus anterior* in an early chick embryo. The specimen was obtained from an egg which had been incubated for thirty-four hours. It appears that there were two separate notochords throughout the whole length of the embryo, as far as it was differentiated. Two neural canals were de-

veloped separately in the anterior part of the embryo, but fused together posteriorly. The fore-gut, at the anterior end, consisted of two separate tubes, but further back one very broad and compressed cavity took their place. It is very evident that had the egg been fully incubated a monster would have been produced which would have borne a close resemblance to those monstrous forms which are not infrequently met with in veterinary practice.

AN EXPERIMENT IN IMMUNITY.

Dr. Ewart, Professor of Natural History at Edinburgh, has been devising breeding experiments which are of the greatest theoretical and practical interest. In one of these experiments it was thought that zebra mules might possibly prove to be immune to the disease communicated by the Tsetse fly, and if so, the problem of African transport might be solved. Professor Ewart inoculated three of his hybrids with the Tsetse fly, but unfortunately, it turns out that the inoculated animals, though more resistant than horses, all died in about eight weeks.

THE RESTORATION OF COÖRDINATED MOVEMENTS AFTER NERVE SECTION.

Dr. Robert Kennedy has conducted experiments on the sciatic nerve of the dog with a view to elucidate some points relative to restoration of function after section and subsequent suturing. The following are the conclusions at which he has arrived :—

1st. That after-section and immediate coaptation of a nerve, restoration of conductivity and of voluntary function may be effected in a few days.

2d. That this early restoration of conductivity need not be the result of reunion of the old nerve fibres, *i.e.*, reunion by so-called first intention, or without Wallerian degeneration, but may be the result of regeneration of young nerve fibres in the peripheral segment.

3d. That voluntary coördinated movements are regained equally soon, whether the two ends of the divided nerve are united as accurately as possible, so as to bring the corresponding ends of the nerve fibres into contact as nearly as possible, or whether, previous to reunion, the peripheral segment is twisted, so that, when united to the central segment, non-corresponding ends of the nerve fibres are brought into contact.

4th. That in the latter case the microscopic examination of the seat of union leaves it doubtful whether the restoration of function is due to the re-establishment of the old paths by decussation in the nerve cicatrix, or to the reunion of ends of nerve fibres which do not correspond, but which happen to be brought into apposition.

5th. That in suturing a divided nerve no trouble need be taken to secure that coaptation of the two segments is effected in the old relationship, the simple approximation of the two ends, no matter in what relationship, being all that is required.—(*Trans. Roy. Soc. Edin.*)

MICROBE OF "PINK-EYE."

Dr. H. E. Annett, of the Liverpool School of Tropical Diseases, has been investigating "pink-eye" in Liverpool horses. He believes that he has found the same bacillus in every case. We understand further that Professor M'Fadyean has been called in. Should Dr. Annett's results be confirmed, we may confidently expect that our views regarding "pink-eye" will be expanded; possibly, also, considerably modified. Developments will be awaited with interest.

TELEGONY AND THE INHERITANCE OF ACQUIRED CHARACTERS.

The absorbing questions of the influence of a previous sire on future progeny, and the possibility of the inheritance of acquired characters are at the present time receiving much attention at the hands of scientists, though not more than their importance merits.

Among the more recent contributions are a critical review of Professor Ewart's "Penicuik Experiments," and a paper by Mr. C. J. Bond in the *Transactions* of the Leicester Literary and Philosophical Society. The review appears in the December number of the *American Naturalist*, and the reviewer, while agreeing in the main with Ewart's conclusions, urges the pressing necessity of further experiments.

Mr. Bond, in his paper, says "that the evidence in favour of the transmission of acquired as opposed to congenital characters breaks down in that group of cases in which the supposed occurrence of telegony was thought to prove such transmissions, that the explanation of this phenomenon is reversion, and that this may also account for certain phenomena following budding and grafting in plants. Many of the remaining results can be explained by the direct action of pollen on the maternal tissues without inheritance."

FRENCH VETERINARY CONGRESS.

A French Veterinary Congress will be held this year at Paris under the presidency of M. Darbot. The dates of the meetings are the 7th, 8th, 9th, 10th, and 11th of September, *i.e.*, on the same days as those on which the International Horse Show is to be held. The programme of the Congress contains discussions on such interesting and important topics as the inspection of meat, breeding of horses, the organisation of a Veterinary Sanitary Service, agricultural instruction by veterinarians, &c.

Although the Congress is national in character, foreign veterinarians will be cordially welcomed, and will be permitted to speak in the discussions. Only French veterinarians, however, will be entitled to vote on the questions. British veterinary surgeons who intend being present, or who desire copies of the proceedings of the Congress, should send a fee of 10 francs to any of the following gentlemen:—M. Larmet, Besançon (Doubs); M. Rossignal, Melun (Seine-et-Marne); Dr. Moreau, 380 Rue de Vaugirard, Paris; M. Ch. Morot, Troyes (Aube).

Extracts.

TYMPANITES OF THE GUTTURAL POUCHES.

ALTHOUGH this affection is not of everyday occurrence, cases do occur with fairly frequent regularity. This is strikingly illustrated by the fact that the December number of the *Annales de Médicine Vétérinaire* contained the analysis of a case reported by M. Kroon, and that M. Degive records two similar cases in the January number of the same journal.

Concerning his first case, M. Degive states that it occurred in the right guttural pouch of a large filly, one year old. The position of the swelling, its elastic consistency, and its tympanitic percussion note, left no doubt as to the condition. A large incision was made over the inferior third of the

swelling, the hand was introduced into the pouch, and, by means of the index finger passed into the pharyngeal orifice, light and sustained pressure was exercised, as suggested by Professor Thomassen. Daily antiseptic injections of creolin or corrosive sublimate were used after the operation. In three weeks the external wound was completely healed, and the parotid region had regained its normal form. Unfortunately two months had not elapsed before the tympanites was as bad as ever.

Judging that he had not made a sufficiently large opening into the pharynx, M. Degive operated once more. This time he took the precaution, before applying pressure on the inferior angle of the opening, to slightly cut the mucous fold by which it is formed. In this way maximum dilatation was obtained. The external opening was kept open by means of a tube for more than three months. The dilatation of the pouch has not recurred; cure is definite and radical.

The second case was that of a six-months-old entire English foal. An incision was made on a level with the larynx, and some foul-smelling gas was thus allowed to escape. Introduction of the finger revealed two linear series of granulations. The pharyngeal opening appeared normal. Each day an injection was made twice daily of lukewarm liquid of Van Swieten. During the first five days the injection remained in the pouch, but afterwards it either came down the left nostril or was swallowed. The external opening was kept open for some time by means of a tube. Five weeks after operation the external wound was completely healed. The swelling showed no tendency to recur, and so the foal was returned to its owner.

M. Degive concludes from the above cases—

1st. That tympanitic distension of the guttural pouches is the result of retention and of a prolonged gaseous pressure.

2d. That the accumulated gas is most often produced locally by an alteration of the mucous secretion.

3d. That the gaseous retention may depend exclusively upon a special arrangement of the pharyngeal orifice.

It follows, therefore, that there are three objects to be sought by operation, viz.—incision of the dilated pouch, antiseptic injections, and widening of the pharnygeal orifice.

ACTINOMYCOSIS AND IODIDE OF POTASSIUM.

"There is no new thing under the sun."

Dr. Leonard Pearson, Dean of the Veterinary Faculty of the University of Pennsylvania, makes a very interesting communication in the *Journal of Comparative Medicine and Veterinary Archives.*

He states that he has recently received from Dr. James B. Rayner, of West Chester, Pa., the lower jaw of an ox that was killed in 1864.

"This specimen shows enlargement opposite the first and second molars of the right side. The enlargement is about 3 inches long, and increases the size of the jaw to twice its natural thickness. The outer surface of the enlargement is hard, but rough and porous, with numberless channels passing from the surface into the interior of the bone. The specimen has the appearance of a healed process. Dr. Rayner was called,

in April 1864, to see the animal from which this specimen was taken. He diagnosed actinomycosis (lumpy jaw), and considered it a regular typical case of that disease. Now, the interesting part of this history is that the steer was treated by administering on the feed a mixture containing iodide of potash, ½ drachm; iodine, 3 grains; and bone-meal, 1 tablespoonful, given three times a day. Externally the enlargement was treated with an ointment containing iodine and iodide of potash. The condition improved during the summer, and by fall it was healed. The ox was killed for beef in the winter.

"Attention was first called to the treatment of actinomycosis with iodide of potash by M. Thomassen, of Utrecht. Thomassen commenced to use this treatment in 1880, and it was upon his recommendation, and that of M. Nocard following it, that the treatment has been so extensively employed. It is now known that iodide of potash is a specific for actinomycosis.

"How unfortunate it is that Dr. Rayner's case was not reported and published at the time. If it had been, others would have been prompted to have tried this treatment; its value would have been established more than thirty years ago, and Dr. Rayner would have world-wide recognition for this great discovery.

"The moral is—Do not hide your light under a bushel, but report your cases and get the credit you deserve."

IS THERE A BURSA BETWEEN THE LIGAMENTUM NUCHÆ AND THE FIRST CERVICAL VERTEBRA?

OPINION seems much divided; some anatomists describe a bursa, others do not. In order to clear up the question, Mr. Hopkins has made a series of very interesting investigations. In 32 adult horses, 10 were found to have neither bursa nor any differentiation of connective tissue, such as is sometimes described. Of the 22 which had a bursa, many showed pathological conditions; in 18 of them, the walls of the bursa were the site of calcareous deposit, or else the ligament was irregular, or in some cases partially divided. In four cases only was there a bursa without signs of pathological change. In addition to the 32 adults examined, 3 young foals were also dissected, and in none was a bursa found.

Hopkins' results are shown in the following table:—

	Adults.	Foals.
Bursa absent, ligament healthy . .	10	3
„ present, ...	22	0
„ infiltrated with calcareous matter, or the ligament altered, or the two conditions combined,	18	0
„ Bursa and ligament, both healthy, .	4	0

(*Jour. of Comp. Med. and Vet. Archives.*)

FORMALIN AS AN ANTISEPTIC.

W. J. MARTIN, after a thorough trial, is of opinion "that as a surgical antiseptic formalin is entitled to the utmost confidence of the surgeon." He does not use it in a concentrated form, as he finds that it is irritating

to the tissues, and also that it is corrosive to surgical instruments immersed in strong solutions.

As an after-dressing for surgical and accidental wounds it has given the utmost satisfaction. The strength of the solution used ranges from ½ to 1 per cent. In this strength it is non-irritating and non-corrosive in its action, and there is no danger of toxic absorption. Martin is further of opinion that, in this strength, formalin is the cheapest as well as the most effective antiseptic for general veterinary practice.

It is of special value in the treatment of lacerated and penetrating wounds, poll-evil, fistulous withers, pyæmic infection resulting from infected wounds, &c.

In stables in which horses are suffering from acute coryza or strangles, acute laryngeal catarrh, infectious pneumonia, &c., the spraying of such stables with dilute solutions of formalin will prove highly beneficial.

From some recent experiments conducted with this drug concerning its bactericidal properties, it was found that a solution of formalin, 1 - 10,000, checks the development of the bacilli of anthrax, cholera, typhoid, diphtheria, and staphylococcus pyogenes aureus. Very dilute vapours of formalin have the same action. A 1 per cent solution kills pure cultures of pathogenic germs in one hour. This action is most marked in dilute alcoholic solution.

(*Journal of Comparative Medicine and Veterinary Archives.*)

OPEN-AIR TREATMENT OF PULMONARY TUBERCULOSIS.

Of late years, no subject has engaged the attention of veterinary and medical professions alike to such a degree as has that of tuberculosis in its many and varied forms. It has been shown that many pathological processes, the production of which was formerly assigned to many causes, are in reality tubercular in origin. The therapeutic measures intended to combat such processes have consequently undergone a very material change.

During the past year the medical mind has been exercised by the method of treating pulmonary tuberculosis by what may be called the pulmonary fresh-air bath. Some still withhold judgment as to the efficacy of the method; many laud it to the skies. Time alone will show whether it will fulfil expectations. Whether the open-air treatment of phthisis will have any effect on veterinary curative measures, remains to be seen. In any case, the veterinary practitioner cannot afford to be ignorant of the principles of this mode of treatment and its results as they from time to time emerge. It is therefore with pleasure that we find Dr. Philip expounding the doctrine, and graphically detailing the means by which it is carried out, in the January number of the *Scottish Medical and Surgical Journal.* Dr. Philip points out that the open-air method is a complete reversal of the ordinary methods. The key-note is, not protection from changeable atmospheric influences, as formerly practised, but exposure. Elevation, temperature, dryness or moisture of the atmosphere, character of the soil, &c., are all negligible quantities. ". . . The open-air treatment consists primarily in the free exposure of the patient to 'open air.' He must be bathed in fresh air day and night, quite irrespective of the nature of the weather. Nothing must be accepted as an excuse for a

reversal of the policy—neither rain, nor snow, nor wind, nor even mist." Throughout a prolonged experience, Dr. Philip has not on any occasion seen the slightest accident occur in relation to the freest exposure of the patient day and night to this influence.

By day the patient should be outside entirely, either resting (if the case demands it) or taking suitable exercise. In some cases, the bed even is carried outside.

By night the windows should remain freely open. "The existing popular dread regarding night air is quite mistaken."

Dieting is apparently governed by the principle that the patient is to have as much food, of a suitable kind, as he can possibly take.

Treatment by means of drugs appears to take a very second place.

In all but the very worst cases, good effects may be looked for. The earlier the case is taken in hand, of course, the better the results.

We strongly recommend all interested in the subject—and what veterinary surgeon is not?—to carefully consider Dr. Philip's paper, as the author is one whose evidence carries much weight.

ON THE DANGER OF USING SPIDERS' WEBS AS A HEMOSTATIC: A HORSE ACCIDENTALLY INOCULATED WITH VACCINIA BY THEIR USE.

On the 22d August 1899 I was consulted by one of my neighbours with regard to a horse of his which had wounded itself with the brambles surrounding the field it was in. I advised him to apply bandages soaked in cresylated water in order to stop the hæmorrhage, which he said was violent. Three hours later I examined the wounds, which were in the forearm and the knee. They were not bleeding, were not deep, and not serious. The bleeding had been stopped by applying spiders' webs, which, proving insufficient, had been supplemented by bands of cotton. I remarked that cobwebs were not advisable, and were even dangerous. I do not know whether my neighbour was convinced or not, for this old practice is very difficult to uproot. At any rate I disinfected the wounds and sewed the edges together, promising a rapid cure.

Four days later the proprietor of the animal arrived in a state of consternation. He informed me that the beast was unable to walk, its limbs were so swollen, and that it would not eat. I believed he was exaggerating, but I had to change my opinion when I saw the horse. Its attitude was one of great dulness. Its fore limbs were swollen from the elbow to the coronet, and moved in a "scythe-like" fashion. The skin, which was hot and painful to the touch, was slightly œdematous. In certain places little papules exuded viscous liquid without any smell. Not knowing what to attribute this complication to, I removed the pins, fearing infection in the wounds. I was reassured by their colour, and by the nature of the pus which came from them.

Two days later the hind legs were all out in an eruption, also some spots of horse-pox had appeared on the lips and on the nostrils, leaving no doubt as to their exact nature. Where did this horse-pox come from? There were cows in the place. I questioned very sternly the persons who had had charge of the horse, but could get nothing out of them to satisfy myself. All that I could learn was that similar pustules always appeared

on the udders of any newly arrived cows, but that all these latter were healthy at that time.

I then asked where the spiders' webs had come from. They came from the byre, whose ceiling by the way is still thickly coated with them. That reply at once showed me the probable origin of this inoculation. The vaccine dust retained by the webs had been transmitted to the wounds, which had proved to be doors of admission for it.

The long period of uselessness of the horse which resulted from the inoculation was sufficient to convince the proprietor of the danger run in using spiders' webs as a hemostatic, and this case, which was useful as an experiment, had more effect on him than any number of arguments would have had.

(M. Pecus in the *Recueil de Méd. Vét.*)

Reviews.

Proceedings of the American Veterinary Medical Association. Session 1899.

The publication of the proceedings of Societies' Meetings is a subject that might profitably commend itself to the consideration of Veterinary Associations in Great Britain.

Some of our larger Societies, *e.g.*, the Central or the Lancashire, might produce annually a most valuable addition to veterinary literature in the shape of a collection of the most important papers read before them during the year.

The American Veterinary Medical Association has issued their proceedings for 1899, and a most useful indication of the condition of American veterinary science is thereby provided. By means of these proceedings we are enabled to form a fairly accurate conception of the tendency to scientific methods which is obtaining among American practitioners.

Not the least interesting and suggestive of these collected papers is one by U. S. Mayo, in which he speaks of "The Veterinarian of the Future." He looks back upon the last fifty years and says: "It is within the memory of most of us here when the fleam was the sheet anchor in the treatment of most diseases of animals, and I can remember of listening with boyish awe to the terrors of the 'hollow horn' and 'wolf in the tail.' I think that even medical science has not made greater progress than veterinary science has made in the last twenty-five years." This is as true of Great Britain as it is of America. Of the education of the future veterinarian, Mr. Mayo believes that it "should begin in the home, because it is there that the principles of honesty and integrity that are so essential to all success in life are instilled. Honesty from principle, and not from policy. I sometimes think that the veterinarians in the associations which they must encounter with horse-dealers, sometimes lend themselves to practices which should not be, and I believe that the veterinarians of the future, to be successful, will not stoop to this. Then again, I believe that the education of the veterinarian of the future should be broad, liberal, and scientific. I am a firm believer in an industrial education, an education that trains not only the mind to devise but the hand to execute. I am a firm believer in the new or laboratory method of education."

A plea for the more general use of anæsthesia in veterinary surgery is put in by Dr. J. P. Turner. He urges in support of its more general use the following reasons, among others—" . . . The danger of a fractured vertebra in the horse only lasts during the preliminary period of excitement, while in the ordinary operation without anæsthesia it is always present. Furthermore, the operation can be performed more rapidly and better on the quieted subject, and the danger to the operator is the minimum, and this should always be considered as a paramount duty by every veterinary surgeon, as our journals are continually noting serious accidents and often deaths through lack of proper precaution and the absence of either general or local anæsthesia."

The rest of the papers are equally interesting and deal with such subjects as meat inspection, tuberculosis, rabies, disinfection, azoturea, and other like subjects. Olaf Schwarzkopf gives a very concise statistical table of the results produced in America by Schmidt's treatment of milk fever. He concludes with the following pregnant remarks:—"We have been enriched by a clean, intelligent, and successful method of therapy, hitherto unknown in veterinary medicine or in human medicine; and the discovery, having been made by a modest country veterinarian without the aid of costly laboratories, proves that the dissemination of true veterinary science is finding its way into the ranks of the toiling practitioner of the civilised nations."

We repeat that in these proceedings we have the means of gauging the march of progress in America, and it is a pity that no British Society provides us with a similar compilation.

WILLINGS' PRESS GUIDE, 1900. (Price, bds. 8vo. 1s.)

We have just received this excellent index of periodical publications, which maintains its well-deserved reputation as one of the most accurate and complete guides to the World's press to be found. Its arrangement is admirably clear and simple, and its Colonial and Foreign section—including the United States—is a particularly useful feature.

NEW ZEALAND DEPARTMENT OF AGRICULTURE.

VETERINARY DIVISION.—REPORTS, 1898-99.

These Reports, chiefly drawn up by Mr. J. A. Gilruth, M.R.C.V.S., form very interesting and instructive reading. From them we learn what veterinary science is contributing to the well-being of one of our colonies; and we are gratified to learn that so much is being done.

In pleading for the needs of registration of veterinary surgeons in New Zealand, Mr. Gilruth says that "it must appear anomalous that, in a colony which does so much for the agriculturist and stock-owner, there are no regulations regarding the qualifications of those who may care to assume the responsibility of treating the lower animals in ill-health, and no means of preventing the deception of the stock-owning public. . . . It is contemplated having all export meat examined and passed by duly qualified veterinary surgeons, and at present this is being done in several establishments by officers appointed by the Government, in terms of the amendment of the Stock Act of last session. It is imperative, therefore, that the Govern-

ment should protect its own name, or the inspection will not have that influence it should command, if it be ascertained that any individual whomsoever may affix these initials which alone indicate in Great Britain a duly qualified veterinarian."

The section of the Reports dealing with tuberculosis is exceedingly interesting. The tuberculin test applied in the Wellington, Napier, Wanganui, and Blenheim districts "disclose in the last-named locality a state of bovine health which is probably unequalled in any portion of the civilised world, but 5 cows having reacted out of 550 tested, or less than 1 per cent.

"The inspection of meat killed at Dunedin City Abattoir . . . has demonstrated that the disease is present to a certain extent also amongst butcher cattle. During the first year's operations 9700 cattle were slaughtered, and 200 condemned—an average of 2 per cent., not considering those in which the lesions were so slight as not to render the flesh in any way dangerous."

"*Channel of Infection.*—The following summary of 150 post-mortem examinations personally conducted on animals that had reacted to the test during the past year is of considerable interest as showing the seats of the disease, and indicating the organs primarily attacked :—

Organs affected.	No.	Per cent.
Generalised (lungs, liver, pharnygeal, mediastinal, and mesenteric glands),	14	9
Affected, but not in lungs,	97	65
Lungs,	52	28
Thoracic lymphatic glands,	92	61
Abdominal lymphatic glands,	79	52
" " and liver,	36	24
Pharyngeal glands,	39	26
Abdominal glands (alone),	30	20
Abdominal and pharyngeal glands (alone),	42	28
Thoracic glands (alone),	13	9
Pleura (excluding generalised),	4	3
Not affected,	1	0·66

"The great majority of these cases were only housed during milking-time, and they were of all breeds and of all ages. It will be observed that in one no lesion could be discovered post-mortem. The reaction was definite and the animal young, yet, although the most searching examination was made, and under the most favourable circumstances, no pathological lesion was discerned save hydatid cysts, and even these were comparatively rare.

"The above summary shows how comparatively few animals were affected in the lungs, and a perusal of the post-mortem notes of each animal, were space available, would prove that very few of those were confined to the lungs, or even the thoracic cavity. Even then the bald statement of the location of the lesions is apt to be very misleading, for in many cases the lungs, although diseased, were less so than even the lymphatic glands of the mediastina. Indeed, I have frequently remarked with surprise how extensively the bronchial, and especially the mediastinal, lymphatic glands

may be affected, while the lungs remain free, or at most affected but very slightly. In the great majority of cases the lungs appeared to have become infected only comparatively recently. When the number of animals which were but slightly diseased is alone considered, the percentage affected in the abdominal and pharyngeal glands (glands undoubtedly of the alimentary canal) is very high. When the thoracic glands alone are affected, or affected very greatly, while the lungs are but slightly affected, it is most probable that the channel of contamination is the digestive region. Indeed, considering all the circumstances, the surroundings and the post-mortem evidences, the conclusion is forced upon one that infection usually takes place through the alimentary and not through the respiratory region, in this colony at all events. This is further supported by the small percentage of cases in which the pleura is affected. As the superficial lymphatics of the lung drain through the pleura to some extent, it might be expected that the percentage of cases in which the pleura was affected would approach in some degree the percentage of thoracic glands affected. In any case, it is difficult to understand how the mediastinal glands could be affected through the bacillus gaining entrance by the lungs, without the bronchial glands being also affected.

"Mr. Snowball has kindly furnished me with particulars of the organs affected in 122 cases of tuberculosis which have been detected at the abattoir, and in which careful examination was made of each organ. The following is his summary of the results :—

Organs affected.	No.	Per cent.
Pharyngeal glands (alone),	10	8·2
Lungs (alone),	14	11·5
Liver (alone),	18	15·0
Mediastinal glands,	8	6·5
Mesenteric glands,	14	11·5
Pharnygeal and mediastinal glands,	3	2·5
Lungs and mesenteric glands,	6	5·0
Lungs and mediastinal glands,	10	8·2
Liver and mesenteric glands,	10	8·2
Liver and mediastinal glands,	4	3·2
Lungs, mediastinal glands, and liver,	12	10·0
Generalised (lungs, liver, pharyngeal, mediastinal, and mesenteric glands),	13	10·5
Total,	122	

"It will be observed that about 20 per cent. of the above number were affected in the lungs alone, or the lungs and mediastinal glands; and, as practically the whole of the Dunedin beef supply is from bullocks, on account of the high standard required to pass the rigid inspection, it will be seen that the lungs may become primarily affected with the disease in cases where it is absolutely certain the animals were never housed. It must be admitted, of course, that the location of the disease is no sure guide or indication of the channel of infection, and the above results, combined

with the others published in this report, demonstrate that by location alone we cannot decide as to the mode of contamination."

As regards measures whereby tuberculosis would be limited in its spread, and also whereby the public health might be guarded, Mr. Gilruth makes the following recommendations:—

"1. *There should be a periodic examination of all cows supplying milk for human consumption*, whether directly or through the dairy factories, and all animals showing clinical symptoms of the disease should be immediately slaughtered. This inspection should take place at least every three months.

"2. *The tuberculin test should only be applied where isolation of the reacting animals is possible, or where it is necessary to assist in diagnosis of doubtful cases.*—By testing such herds, individuals who are really desirous of making a thorough attempt to eradicate the disease would be assisted to do so. As, however, this assistance would be almost solely for the benefit of the individual, and as the value of the individual's herd would be materially increased thereby, it is only just that he should bear the whole expense.

"In dealing with this, I might point out that, unless the importation of tuberculin by persons, other than those authorised by the Government, be prohibited, it is quite possible that fraud may be committed, as it is well known that animals which react are for more or less lengthened periods afterwards immune to a further reaction. Therefore a Government Inspector might unwittingly give a clean sheet to a diseased herd which had been tested by the owner, say, a week previously.

"3. *Compulsory notification to the district stock inspector of any disease of the udder in milk-cows.*—This regulation would be most beneficial, could be easily adopted, and would not in any way be a hardship, as, provided a cow's udder be non-tubercular, investigations indicate that the milk cannot be contaminated, unless indirectly from the tubercular cow.

"4. *Pasteurisation of Milk in Factories.*—The temperature to which pasteurisation should be made compulsory would require to be not less than 180° Fahr., as below that degree it is not certain that the bacillus of tuberculosis would be killed during the short time the milk is in the pasteuriser. The boiled flavour so much objected to would practically disappear if sufficient means for cooling were also adopted.

"5. *Inspection of Meat.*—This necessity has been frequently dealt with, and when the reports of the Dunedin and Invercargill slaughter-yards, which were published last year, are taken into consideration, it will be readily seen that, independently of the danger of diseased meat, the erection of public abattoirs is a pressing necessity in New Zealand."

Recommendations these that might be followed, with profit, by other Governments than that of New Zealand.

Apparently actinomycosis of the udder has been found in New Zealand as well as in this country, for Mr. Gilruth states, "A portion of udder forwarded to me by Stock Inspector Weem proved on microscopical examination to be affected with actinomycosis."

The Schmidt treatment of milk-fever by the injection of iodide of potassium bids fair to supplant all other methods. "Mr. Charlton, of Christchurch, has experimented considerably with an adaptation of this method of treatment, and I am assured by many that the results have been beyond expectation, nearly every animal which has been treated having recovered."

Obituary.

WILLIAM DUGUID, F.R.C.V.S.

On Tuesday, January 16th, William Duguid was called to his rest, —a rest well earned. His has been a life full in the truest sense. Ever since he joined the Veterinary profession in 1863 he has proved himself a labourer worthy his hire, and worthy in more ways than one.

A native of Aberdeenshire, and brought up on his father's farm, William Duguid attracted the attention of that keen judge of humanity, the late John Gamgee. Gamgee, fully convinced of the latent talent of young Duguid, persuaded him to embrace the Veterinary profession, and to this end the name of William Duguid was entered on the books of the New Veterinary College, Edinburgh. On obtaining his diploma in 1863 Mr. Duguid, instead of going out into the world as a practitioner, elected to stay on at his *alma mater*, and acted as Demonstrator of Anatomy in that institution until Gamgee went to London in 1865 in order to found the Albert Veterinary College. Duguid accompanied his master, and became one of the members of the staff in the newly opened school. After studying Physiology under Sharpey at the University College and Beale at King's College, he succeeded Brett as Lecturer on this subject.

When rinderpest invaded England in 1865 Gamgee was active in devising measures for its suppression. In this he was ably assisted by Professor Duguid, upon whose shoulders fell much of the work that was done at the College, as well as the practical details of the Government inquiry conducted by Dr. John Burdon Sanderson. Burdon Sanderson continued to work at the Albert Veterinary College after the Cattle Plague had been stamped out, and Duguid acted as his assistant. This led Dr. Sanderson to appoint Professor Duguid Veterinary Surgeon to the Brown Institution, where he not only conducted the free clinique, but also took part in the research work of that institution.

In 1870 Professor Duguid became assistant inspector to the Veterinary Department of the Privy Council. In 1876 he was elected a Vice-President of the Royal College of Veterinary Surgeons, and in 1877 he became a member of the Board of Examiners, a position which he retained and ably filled until a short time before his death. From 1883 to 1887 he sat on the Council of the Royal College of Veterinary Surgeons. To these official appointments we must add that Professor Duguid for many years acted as Veterinary Surgeon to the Royal Agricultural Society of England, and also to the Yorkshire Agricultural Society.

No need for us to sing the praises of William Duguid, for each one that knew him will offer up his eulogy.

CONTAGIOUS DISEASES ANIMALS ACTS, 1864 AND 1899.

SUMMARY OF RETURNS OF OUTBREAKS for the Four Weeks ending 10th February 1900.

ENGLAND AND WALES.

Foot and Mouth Disease.	Swine Fever.	Glanders (including Farcy).	Rabies.	Anthrax.	Sheep-Scab (for month of January).
Outbreaks 5 Attacked 63	Outbreaks 147 Slaughtered 1552	Outbreaks 84 Attacked 141	None.	Outbreaks 29 Attacked 45	Outbreaks 626
SCOTLAND.					
None.	Outbreaks 1 Slaughtered 0	Outbreaks 1 Attacked 1	None.	Outbreaks 12 Attacked 21	Outbreaks 16
IRELAND.					
None.	Outbreaks 12 Slaughtered 145	None.	Dogs 4 Other Animals 0 Destroyed 71	None.	Outbreaks 123

Communications, Books, Journals, &c., Received.

Veterinarian; Record; Bulletin of The John Hopkins Hospital; The Journal of Comparative Medicine and Veterinary Archives; The Scottish Medical and Surgical Journal; American Veterinary Review: The Public Health Journal; The Journal of the Jamaica Agricultural Society; Queensland Agricultural Gazette; Petersburg Veterinary Society's Journal; La Riforma Veterinaria (Naples); Recueil de Médecine Vétérinaire (Alfort); L'Echo Vétérinaire (Liège); Annales de Médecine Vétérinaire (Brussels); Berliner Thierärztliche Wochenschrift (Berlin); Deutsche Thierärtzliche Wohenschrift (Hannover and Karlsruhe); La Clinica Veterinaria (Milan); La Revista Veterinaria (Buenos Aires); Agricultural Journal (Cape Town); Bulletin de la Société des Sciences (Bucarest).

We regret that, owing to great pressure, we are unable to publish this month several important communications, &c. received from contributors.